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EDUCATIONAL REVIEW

JUNE, 1891.

I.

APPLICATIONS OF PSYCHOLOGY IN EDUCATION.

Professor Royce, in a most suggestive paper, recently published (EDUCATIONAL REVIEW, I: 15, 121), has observed that what the teacher has first and chiefly to gain from the study of psychology, is the psychological spirit; that is, the love and the skill that are required for the purposes of mental diagnosis. The teacher should be a naturalist, in the habit of observing the mental life of children for its own sake. "It is in this fashion that naturalists always have to work. What is here in this live thing? Why does it move thus? What is it doing? What feelings does it appear to have? What type of rudimentary intelligence is it showing? Ask such things not because they will give you a systematic theory, but because they will help you to form the habit of watching minds." This is admirably said. But it is not quite all that is necessary; for the teacher is not only an observing naturalist. He is an agent appointed to solve problems, to produce effects on a living organism, to modify forces, which begin by being psychological, but end by being social.

One way of stating the problem is the following: "The child must be developed into an harmonious organism." This formula is more ambiguous than it sounds. For an organism implies a medium, and the medium in which the psychic organism of the child is to live consists of ideas. Harmony of the organism, therefore, means its adjustment to ideas. But ideas also constitute integral parts of this mental organism. Therefore harmony means adjustment of internal ideas, or those existing in

the mind, to external ideas, or those existing in the social mind, or imposed by the constitution of things. But again, all ideas are not accessible to all minds; and therefore minds do not live in the same media, but are often in worlds widely remote, even when the bodies of these minds are in close propinquity with one another. Each mind selects, creates, the world in which it is to live. And conversely, all the events which have transpired in the history of the world are but the outward realization of ideas which have been associated with brains like these. Despotisms, wars, revolutions, pyramids, crusades, inquisitions, cathedrals, dynasties, religions, sciences—all are only projected thoughts. Of what fearful importance is it, then, to know what thoughts shall spring up in the growing brain, and, if possible, how to modify their nature and their sequence!

The problems of psychology and education are so interesting, and their points of contact so numerous, that for a brief discussion it is equally necessary and difficult to make a choice. I will make this choice in favor of the theme which is most prominently forced upon the attention of all teachers. This is the process by which a child acquires the knowledge which it is the business of the teacher to impart. I may state this subject in the form of a definite problem, as follows:

Given, a child with a small amount of knowledge spontaneously acquired, to increase his knowledge in directions where spontaneous activity would not suffice for the acquisition. Knowledge of a thing out of the mind constitutes an idea in the mind. Therefore, the problem of imparting knowledge to the child may be stated as the problem of exciting or generating ideas in the child's mind.

I do not propose to discuss this problem exactly from the practical point of view. Nor have I to suggest any very new methods of practical instruction. I desire rather to inquire into the principles which underlie methods already in operation. For as soon as we examine into the matter a little, we find that some of the most commonplace tasks of the school involve processes which are complex, intricate, and to

a considerable extent mysterious. A sense of this intricacy and this mystery cannot, of course, directly tell the teacher how to solve the educational problem, but it may, nevertheless, often guide him insensibly to principles which will prove fruitful for this solution. At all events, the theoretical discussion is interesting for all who care, not only that a thing should be done, but that the how and wherefore of the doing should be understood.

The child who is patiently or impatiently waiting to be taught, has a brain which, in some mysterious manner, functions during the process of learning. He is expected to remember what has been told him, and must do so in accordance with the laws of memory; and when he forgets, it is probable that these laws have been thwarted or violated. The knowledge spontaneously acquired before the child is old enough to go to school, chiefly concerns sensible objects; and the laws of the formation of sense perception become, therefore, of the greatest importance to the teacher. This is true, not only for this earliest knowledge, but also because a large amount of all subsequent knowledge continues to consist of material furnished by the senses, and because, also, these sense perceptions constitute the type and model, if not the origin, of all subsequent ideas. And when we find that all thoughts are blent with feelings and volitions; that the mind acts as a unit, and not as a bundle of separate faculties; then as we try to interest the child in a subject by kindling his feelings, or by employing his restless energies in some active work, we can remember that there is a philosophical basis for such a method, that the latter is not a mere practical device for making study agreeable and the child less rebellious, but that it is grounded in the deepest nature of the mind and brain.

Let me return now to my original proposition: "The problem of imparting knowledge means the problem of generating ideas in the child's mind." Therefore, we must point out at once that it does not mean simply presenting a verbal statement to the child, and requesting him to learn this by heart. Such

a procedure is inadequate, even if, as is by no means always the case, some pains be taken to inquire if the child can define all the words and terms used in the statement. For while different verbal sentences resemble each other, the facts they imply may be widely different; so that their apprehension by the child's mind becomes a different process in each case. To overlook this is to fall into a cardinal fallacy, only too often immanent in the teaching of children. Then the child, instead of coming under the discipline of several kinds of knowledge and mental work, is submitted to only one kind; the work, namely, of memorizing sentences.

What has been just said will be rendered clearer by considering four different pieces of information which easily might, in ordinary school curricula, be presented to the child on the same day. Let these be, for instance: (1) The properties of a wooden cube; (2) the contour of the north shore of Long Island Sound; (3) the date of the landing of the Pilgrims; (4) the relation of the subjunctive mood to the indicative. Before the child could really know these things, he must have experienced four different kinds of thoughts or phases of consciousness. For the knowledge or idea of a cube depends on an immediate sense perception. The knowledge of the north shore of Long Island Sound involves a mediate sense perception, an idea of relations in space actually existing but not actually perceived, but only conceivable. The date of the landing of the Pilgrims is a knowledge of relations in time. Knowledge of the subjunctive mood is knowledge of relations between ideas. How are we to generate in the child's mind these four different kinds of ideas? How are we to introduce them among the ideas which already exist in his mind, and make up the content of his consciousness? What occurs when the child has a perception of an external object? What when he tries to conceive of an object which he will never be able to see? How does his idea of a time-relation differ from that of his idea of space? And how can such an idea be acquired about a time of which he can have no personal experience? Finally, how is it possible to make a child conceive of

relations which are neither of space nor time, but which only exist between ideas; and these not ideas which have arisen in his own mind, but which belong to a mental experience widely remote and different from his own?

The answer to these questions implies some theory of the nature of the mind and some doctrine of the generation of ideas. Is the mind a product of the brain, and can we excite ideas in the mind by direct action on the brain? Or is the brain the organ of the mind, and can we influence the processes in the brain by means of ideas? To what do our words appeal when we communicate with the child by means of language? Do external objects affect the senses irresistibly, and in a fixed proportion to the intensity of the stimulus they afford? Or does the mind select for its own purposes from among the mass of material soliciting its senses? Do ideas simply stream through mind in an endless succession? Or do they associate into groups according to some principle of organic cohesion? Upon these difficult questions I may touch just sufficiently to find some general background of thought which will be useful in the teacher's practical work.

The first suggestion, that the mind is the product of the brain, is adopted, though unconsciously, by many persons who would not call themselves materialists. It is really held by all those who think any special care or strenuousness in mental education to be unimportant, and who believe that if the physical health of children be properly provided for, intellect and character will develop spontaneously in any desired direction. Obviously the persons holding such opinions are much more often parents than teachers. But, even when we have secured the most vigorous nutrition and circulation of the brain, we are entirely unable to foretell what kind of processes will take place in it. The healthiest brain may originate the feeblest thoughts, and conversely powerful mental processes may be sustained by brains of frail physical power. Apart from strength or feebleness, we are still less able to say what kind of thoughts or ideas will be manifested in connection with the brain processes (unknown to us) which do occur. We

can make a muscle contract, and produce a given movement; we can so stimulate a gland as to secure a given secretion; but, even when we are able, as we occasionally are by drugs and other agencies, to stimulate the brain, we are as far as ever removed from producing a given thought or given train of thoughts. The only means at our command for exciting a thought, is that of appealing to thoughts previously existing. If it be true, that whenever thoughts arise in consciousness, some nerve process is simultaneously sustained in the brain, we must infer that we are able to excite this physical process in the brain by awakening an idea, though we are quite unable to awaken an idea by any direct excitation of a brain process. Thus, whatever may be its ability in other respects, the materialistic doctrine is quite useless for the purposes of education. Nevertheless, we are constantly compelled to remember the close connection and inter-action of psychical and physical activities. These may be merely double forms of one fundamental activity; or, really and fundamentally they may be different, but the fact of their ncessant mutual influence is obvious both to our consciousness and to our observation. A headache or an indigestion may blur our thought, or a quickened circulation stimulate it to activity and a groundless sense of pleasurable being. But there are also thoughts which can stop the pulse, and blanch the cheek, and make the very sun turn pale.

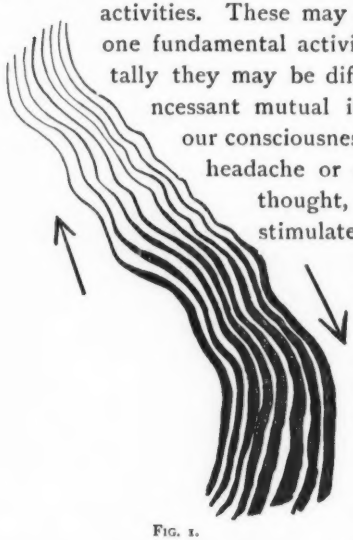


Fig. 1.

I have represented the formula which expresses our simple consciousness in this matter, in the diagram [Fig. 1]. It consists of a series of wavy lines, of which the lower, darker part may be taken for the physical activities; the upper, lighter part for the psychic or mental activities. The arrows

show that these waves are constantly passing both from below upward and from above downward; bodily conditions influencing the mind; mental conditions influencing the health and physical development.

I have endeavored to illustrate several definitions of mind by

FIG. 2.

means of diagrams. Fig. 2 illustrates Hume's theory that "the mind is the sum of its thoughts." It shows a succession of waves endlessly following each other in a stream of thought,[1] and whose sum taken together makes up the totality of consciousness. Fig. 3 is borrowed from Professor James, being the diagram given by him to illustrate his definition. He observes that each thought represents a cross section in the stream: he calls it a pulse of thought, or consciousness.

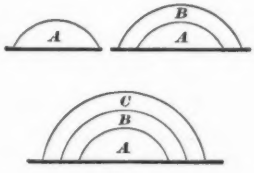


FIG. 3.

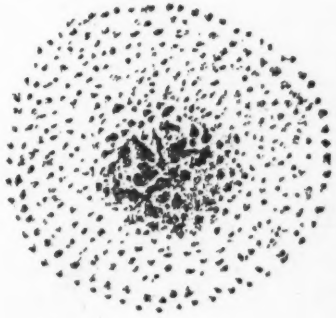


FIG. 4.

Fig. 4 is intended to show Spencer's theory that "the mind is a circumscribed aggregate of activities; and the cohesion of these activities, one with another, throughout the aggregate, compels the postulation of something of which they are the activities." Here also is an aggregate or sum, as shown by

[1] Professor James's expression accords perfectly with Hume's theory, though he adds to it various details.

the cluster of dots. But these do not stand simply for phases of consciousness, or conscious thoughts and feelings, but include with these, forces and tendencies, of which many may be for a long time below the threshold of consciousness. The term activities includes, therefore, thoughts, feelings, volitions, tendencies, all that makes up the character of the mind, its behavior to external things, and its internal horizons and content. I have no diagram to illustrate the definition of Volkmann, namely, that ideas are successive states of an underlying substance, the mind.

These diagrams show distinctly, I hope, that when we approach a child's mind for the purpose of conveying to it some information, we approach groups or clusters of ideas which at each moment are unified into consciousness.

One way of stating the fundamental problem of education is the following: Education aims to enlarge the periphery of consciousness in proportion to the central nucleus; it aims to make disinterested ideas predominate over central egotisms. The peripheric rim of consciousness is enlarged by multiplying the number of thoughts in it, by increasing their recurrences, by suffusing them with feeling, and by quickening them with volition. Contrast the consciousness of the individual to whom the thought of the battle of Marathon, for instance, has become a felt experience, with another to whom the description of the battle, if heard, would remain only a form of words. In the first case, the peripheric rim of consciousness becomes enriched with a new element, and repeated recurrence of such elements or thoughts would give this part of the conscious cluster a density, and therefore a force, comparable with that of its organic nucleus. In the second case the intellectual periphery remains unaffected, and when it long remains so, it tends to atrophy and shrivel, to shrink to a mere membrane, thinly covering the primitive personality. The whole being becomes a mere self of instincts; no disinterested thoughts remain in it. Fig. 5 shows how the cluster which represents consciousness at any given moment, arises out of the moments which precede this. Fig. 5 is a cylinder, of

which Fig. 4 is a cross section. The mutual relations of the center and periphery are the same in both.

There remains another diagram which can be made useful in educational thinking, and which is intended to illustrate a definition given by Professor James: "The mind is the medium upon which the manifold processes in the brain combine their effects." This formula I have illustrated by a diagram of a storage battery charged from a group of galvanic cells [Fig. 6]. The four large cells, which constitute the storage battery, stand as the symbol of the mind; the group of smaller cells, generating the electricity by chemical action, represent the manifold processes in the brain. The same diagram might be used to symbolize the relations of the manifold processes in the general nervous system, to the brain, which certainly stores these up, and in so doing becomes a reservoir of force. Thus the manifold impressions to which the child is subjected are constantly being unified in the brain, and, by their accumulation at this focus, are serving for the generation of force.

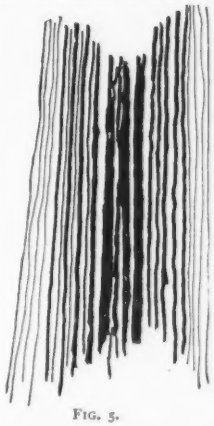


FIG. 5.

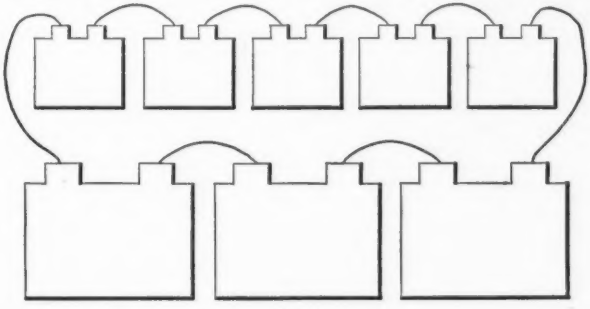


FIG. 6.

To secure an abundant generation of force is the second fundamental aim of education. *The great method in nature for the generation of force is the concentration, in as narrow*

an area as possible, of impressions derived from a very wide area. The most striking—I might say the most tremendous—illustration of this method is furnished by the germ cell. Here an enormous amount of antecedent impressions, tendencies and potentialities, physical, mental, and social, are concentrated upon a point of matter just barely perceptible. A correlatively immense amount of force is produced, sufficient indeed to sustain the germ throughout its entire career of development [see Fig. 7]. Thus the more completely the child's mind unifies the impressions impinging on it, the more mental power results. Conversely, when impressions, though multiple, are not unified, but impinge on the mind in a frag-

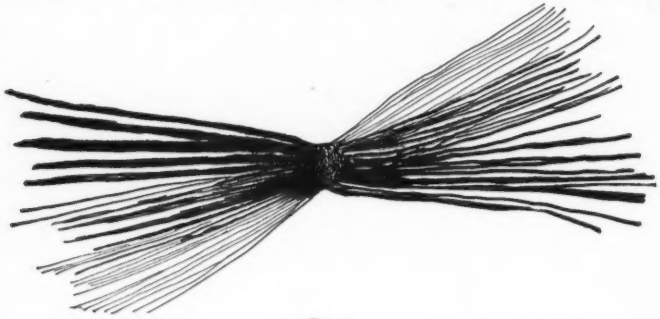


FIG. 7.

mentary, desultory mass, then no single thought results, and power fails to be generated.

This statement may be paraphrased in terms of brain processes thus: Every thought or activity of consciousness is associated with the excitation of some tract of nerve-tissue in the brain. The fusion of such thoughts into a single conception implies that diffused cerebral excitations have been converged into a single massive impulse, which corresponds to the activity of the brain in its totality.

If we analyze the first piece of knowledge which we are imparting to the child—the properties of the wooden cube—we shall encounter three grades of fusion. In the first grade rays of light from the cube are brought to a focus at a certain part of the retina, the point of distinct vision, called the macula

lutea or yellow spot. This focusing necessitates fixation of the eyes by a voluntary effort on the part of the child—effort which constitutes his first act of attention. After this has been effected, color impressions from the retina are transmitted to the brain, and together with them, other impressions from the muscles employed in the fixation of the eye, and in the successive fixations required to bring successive segments of the cube's outline at the ocular focus. There is a certain area of the brain, on its posterior or occipital lobe, known as the visual center, whose excitation seems essential to the act of vision. It is probable that the two sets of impressions I have mentioned as arising from the eyes, meet at this visual center and there fuse together. This is the second grade of fusion, and results for the first time in a distinct perception of the object, the cube. The fusion of rays in the retinal image

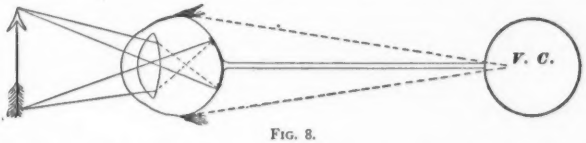


FIG. 8.

took place below the level of consciousness. The perception rises just above that level. In other words, the first thing of which the child is conscious in regard to the cube is that he perceives it. This perception constitutes a new thought or phase of consciousness. [See Fig. 8.]

In a third grade of fusion, perceptions of individual objects are combined into the concept of a class, or a number of simple ideas, or propositions, are combined into a complex conception. Where, however, this third combination takes place, we do not at all know.

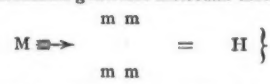
Upon the basis of the facts above mentioned, the following proposition may be constructed: When the brain processes involved in visual perceptions—as of the wooden cube—have been frequently repeated; when they have been associated with brain processes involved in tactual perceptions of the same cube; when these perceptions and processes excited by the cube have coexisted with perceptions and processes excited by other

objects, and revived by memory in consciousness for comparison; then a state of consciousness is aroused which may be called an internal perception. This is a single pulse of thought, but it embraces, as objects, the multiple details of the previous states. They therefore may be said to be unified in it.

It is possible that this internal perception of self-consciousness, this single pulse of unifying thought, corresponds to a total excitation of the brain. And that is why injury of any part of the brain, and even of a very limited part, is liable to be followed by a defect of consciousness, or even by its total loss. What is important to remember is, the necessity that perceptions should in some way converge upon a focus in order to originate a definite conception in consciousness, and that this focusing process seems to be a continuation of those already described at the retina and at the visual center of the brain. The two lower processes of focusing I have illustrated in the diagram [Fig. 8]. The two other processes I have left unillustrated, because of the profound mystery which surrounds them; mystery which it is not well either to belittle or slur over with cheap explanations.

When ideas are to be combined in a single conception, we can always combine statements into a single proposition, and express this graphically in a diagram. All the diagrams I have used to illustrate my own propositions serve, I hope, to show this fact. In addition, I will present a few more designed for purposes of specific school instruction. Thus Fig. 9 condenses,

1. Molar motion of percussion generates molecular motion that we call heat.



2. Molecular motions of chemical action constitute heat, and have a mechanical value, *i. e.*, in reference to molar motion or masses.

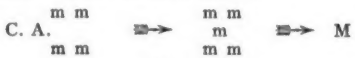


FIG. 9.

under a single visual symbol, several propositions in physics. In Fig. 10 an apparently reverse process is followed. A single

proposition is taken, and shown to be in fundamental agreement with several other propositions, which to superficial inspection seem widely removed. This is the proposition. Electricity flows from a body of high potential, into a body of low potential. These propositions all condense into this single conception: Differentiation passes into equilibrium, and during the transition, force is evolved.

This brief suggestion of a method whereby all items of knowledge are constantly being fused into single concep-

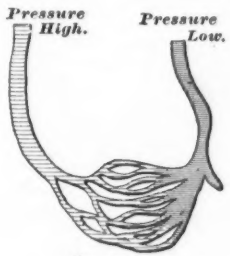
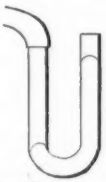
DIFFERENTIATION.	EQUILIBRATION.
ENERGY OF POSITION.	AT LOWEST LEVEL.
 CIRCULATION.	EQUAL PRESSURE—CIRCULATION ARRESTED.
 MANOMETER COMMUNICATING WITH COMPRESSED AIR.	EQUAL PRESSURE.

FIG. 10.

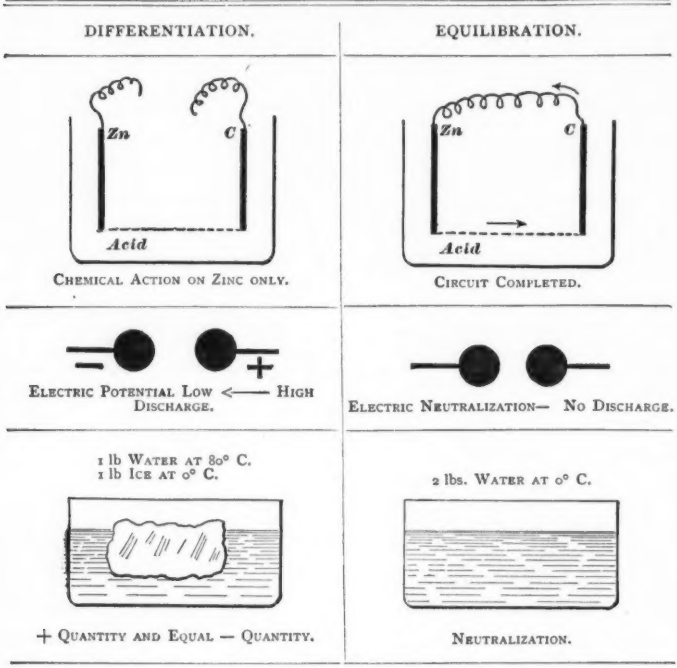


FIG. 10.—*Continued.*

tions, is radically opposed to much prevailing custom. Habitually a dozen fragments of knowledge are presented to the child in as many different text-books, and are liable to remain in his mind as isolated, fragmentary, and lifeless, as are the scattered bones in the valley of Jehoshaphat. How often is a child expected to study separately, reading, writing, spelling, composition, definitions, elocution, synonyms, rhetoric, etymology, Latin, French, and English grammar, mythology, history, and geography! The essentials of these subjects,—indeed for many of them, all that the child needs to know,—might be obtained from the penetrating study of a page of Livy or of Cornelius Nepos.[2] In such a study, these different

[2] While these pages are passing through the press, I am informed that the suggestion in the text is very similar to a fundamental principle of the Herbartian school

subjects would fall into place as the naturally related parts of a complex whole, the whole being the narrative given by the Latin author. The processes of distinct mental perception are closely modeled upon those of visual perception. An idea, like an object, must be apprehended either as an independent whole, or as a part occupying a relative position in a whole. The cube is perceived by the child as an independent whole object: the surfaces and angles of the cube are seen as its parts, and as such are comprehensible and interesting. Should we, however, attempt to abstract the surfaces and angles from the individual cube, and present these to the child to be studied, we should probably entirely fail to awaken in him any mental reaction whatever. A cube is a solid object; before looking at the cube, he had previously accumulated a stock of experience about solid objects, and to this the new experience of the cube can be referred. But of isolated surfaces and angles, he has no glimmer of previous experience; he has never been conscious of such things apart from solid bodies, and for a long time it would be useless to try to call his attention to them. When we apparently do so by drawing lines on paper, we simply transfer the attention to another whole object, this time a flat piece of paper, which can then be compared with the cube.

There is a similar waste of effort in directing a child to the mass of details, which must seem unrelated to each other until some whole is understood. The aspect of the case entirely changes when the spelling, grammar, etc., are taken up as merely subsidiary to a comprehensible purpose, that namely of understanding the Latin narrative. Something happened, that is history. It necessarily occurred in a definite locality, which can only be appreciated by geographical notions. The narrative cannot be understood except by understanding the words, grammatical construction, and style of the Latin language. This involves an incessant, though incidental, comparison with

of pedagogics. Never having had an opportunity to study this system, the fact that the same idea has occurred to me independently, shows how naturally it arises from the unbiased consideration of the nature of things.

at least two other languages, English and French. Spelling, writing, so-called etymology and pretended synonyms of these words, the art of composition, the ethical and even religious ideas incidentally touched upon in the narrative, can similarly be studied under the stimulus of a distinct definite purpose, that, namely, of making the narrative clear in all its parts—of transforming it into an internal perception.

The process of unifying such a mass of details into a single thought is attended by generation of mental force. This is shown in several ways. In the first place, as any one may be convinced who examines his own consciousness, the work of combining several ideas into one is always attended by a sense of invigorating effort. Even such elementary combinations of ideas as are needed to make a single verbal statement is attended by a sense of some degree of exerted power, which increases with the complexity of the combination and with the terseness of its verbal expression. The feeling closely resembles that which is experienced after effective muscular exercise.

The generation of force is also shown by the fact that all acquisitions of ideas, as all processes of combination of ideas into higher concepts, involve acts of conscious volition. We have seen that the first step in acquiring knowledge about the cube was an act of voluntary attention, in which the child fixed the object with his eyes. Each successive step in the process of learning demanded a new act of attention, new adjustments of the eyes and hands, by means of which the different properties of the cube might be seen and handled more minutely. Through these successive acts of attention, the senses become sensitive to more delicate degrees of difference. The relation between the stimulus and the sensation is removed to a different scale. For the same degree of stimulus there is an increasing quantum of sensation; or there is the same quantum of sensation for a diminished degree of stimulus. The trained or attentive eye perceives details entirely overlooked by the unprepared or inattentive observer.

What is this mysterious act of attention, which thus changes

the whole relations of the child to the external world? Mr. Sully will have it that there is no mystery in the case. "Attention," he says, "is simply detention in consciousness." But what is it that commands and effects the detention, that says to the idea, "Stay!" and it stays, instead of passing at once to be lost in the stream of thought? The detention is always determined by the condition of the previous consciousness.

Thus, in a being previously only conscious of sensations, as a baby, or a dog, it is necessary, in order to call attention, to increase the strength of the sensory stimulus. A bright or moving object will be perceived where a dull or motionless one will not. So we move a bright colored ball before the eyes of the baby, or throw a stone before a dog. In the child, older and accustomed to obey, the command of the teacher is sufficient; the expectant idea of something to happen suffices to dominate consciousness, and to inhibit trains of thought irrelevant to the matter demanding attention—that is, the cube. In two other cases, the child's attention may be fixed spontaneously, and in a way identical with that which must be followed in adult life. The child may wish to use the cube as a building block, and will then attentively examine its shape and angles, to see if these will suit his own purpose; or, knowledge of a wooden cube having been previously acquired, he may examine a glass cube from simple curiosity to see how far the properties of the new, and generally resembling object, may agree with those of the one previously known. In the first case the idea of an expectant purpose detains the cube perception in consciousness. A more extensive volition directs the voluntary act of attention. In the second case the attention is commanded by a feeling, the feeling of intellectual curiosity about the relations of things. This feeling serves to detain in consciousness the perception of the cube. Thus either desire or will are essential to the acts of voluntary attention, by which alone the simplest definite knowledge can be acquired. The reason that so many people fail to learn anything after they have left school, is because they are incapable of initiating the deliberate or sustained attention

which is necessary, and this incapacity is due to lack either of the characteristic feeling which should command attention,—that is, intellectual curiosity,—or to the lack of any purpose which the knowledge could be made to serve, were this purpose only the further continuations of ideas. This is why, for the majority of adult human beings, no ideas enter the mind, except such as are revived in the repetition of cerebro-mental processes which have already been carried on. Such people can only think what they already know, and have neither desire nor power to learn anything new.

Since the acquisition of ideas is so closely dependent upon feeling and volition, it becomes necessary for the instructor in ideas to use every means to arouse the feelings of the child and to encourage the performance of voluntary acts.

Empirically, emotion is constantly appealed to in education. Fear, affection, vanity, ambition, self-love, these have been played upon by pedagogues for centuries. They cannot be entirely neglected. Yet to the extent to which these feelings operate, they cannot but tend to increase the area of that personal nucleus, whose relative diminution is a principal aim of education. It is little use to acquire knowledge of impersonal things and relations, if this knowledge only serves to feed the cravings of personal vanity, and afford no satisfaction unless these be gratified.

The feeling which should accompany ideas is that of disinterested curiosity. Of this children are far more susceptible than is often supposed; indeed, far more so than is the average adult, whose indifference to new knowledge is frequently exasperating. But there is no prettier sight in the world than the flushed cheeks and kindling eyes of children upon whom a new idea has just dawned. The task of engaging the volition of children during the excitation of ideas is more complex. In the most simple way it is often profitable to set the child to work at something which interests him, in order that he may incidentally acquire certain information which is in itself distasteful or tedious, and yet which it is desirable that he should know. Thus Miss Edgeworth, in one of her charming stories,

shows how a naughty boy, who has absolutely refused to learn how to read, is brought to do so with avidity, in order to procure some information about the cultivation of radishes—in which practical enterprise he has been made keenly interested.[3] So, as I have already suggested, much substantial knowledge of the cube can readily be acquired, when the child is encouraged to use it as a building block. Innumerable applications of this method will suggest themselves to every skillful teacher. The internal activity of the mind is aroused by desire, and no desire is more effective than that to accomplish a purpose. Many individuals, throughout their lifetime, never think except in connection with something they do. And indeed if we consider the world at large, we may perceive that all thought has developed out of impulses to action. Why should it be otherwise with the growing child?

When experiments are performed by the pupil for the purpose of demonstrating the properties of sensible objects, the influence of his voluntary action becomes still more obvious. The experiment may be as simple as that of dissecting an apple, or it may be among the most abstruse offered in the study of the physical sciences. But in every case the pupil is compelled to do something in order to bring about a situation or elicit a phenomenon which he may subsequently observe. Each action involves cerebro-mental excitation, thus a phase of consciousness, a moment of life to be woven into the chain of existence. Thus the immense importance of experimental study and physical science does not consist, as is sometimes crudely claimed, in a training of the senses. It lies in the circumstance that sensible facts are constantly being transformed into mental facts through the energy of human volition. The world external to the brain becomes resolved into perceptions or ideas in the mind. Such training of the senses as occurs is incidental. At present we cannot be said to possess any system of elementary training for the senses beyond what is afforded by the study of music, or by the exercises of the gymnasium.

[3] The sound philosophy of Miss Edgeworth's stories is often concealed by the simplicity of the garb in which it is clothed.

Such a system might very usefully be devised, based upon psycho-physical investigations.

One very interesting consideration lies right in my path, and should be mentioned, for it concerns a much-mooted but really futile question. The question is: Shall the child study Latin or science? I call the question futile because in reality the child must study Latin in order to be able to study science. In the Latin language, which is also ours, we are enabled to witness an extraordinary phenomenon, which has become the basis of all our thoughts. We are able to witness the incessant transformation of sense perceptions into concepts and abstract ideas. The Latin words are all alive with sensuous force; they move, and fall, and leap, and burn, and sing. Every word is either a picture of a thing, or an event; or else it indicates some space relation between things. Things are above or below, within or without other things. We do not possess superior or subordinate ideas, but ideas of subordination or superiority. That is, we have mental images of objects standing in a superior or inferior position to other objects. Hence there are no such things as synonyms. There are equivalences in nature, but there can be no synonyms in language, for every word represents a different angle of vision for the mind contemplating nature. I have tabulated a small group of words which would most readily be classed as synonymous, and are often carelessly interchanged in English. But read in Latin, and in their native picturesqueness, they are seen to be quite distinct. "Illustrious" is what the light shines upon; "conspicuous," what is espied; "distinguished," what is separated from the rest; "notable," or "notorious," what is known by a sign; and "egregious," which we now only use for blunders, was, originally applied to any celebrity that raised his head out of the flock, as an ambitious ram was so often seen to do.

In a commonplace way of considering these things, the child is merely told that the words are derived from such and such circumstances. The impression is left—is perhaps intended—that some one, already possessed of an abstract idea, seized

upon the sensory image as a means of expressing this. But the reverse is true. The sensory images were first perceived, grouped together, and the relations common to all abstracted, then these relations remained as a residuum in consciousness, an idea mysteriously capable of expression by a sign—a word. This process of the genesis of thought for the race, is exactly repeated for each child. Whoever would acquire some little of the masterful grasp of the world which has forever characterized the Romans, must follow them, and allow their thoughts and language to grow up from their vision of the world. What the eye sees clearly, and the speech reproduces truthfully, that will the hand grasp forcibly, and the mind thoroughly dominate. Because of this mode of evolution of thought, experimental volition can be invoked for the aid of other ideas than sense perceptions.

Let me return to the three other pieces of information which I have imagined to be presented to the child. The next after the cube was the contour of the north shore of Long Island Sound.

This is an actual object in space; but it can never be an object of direct perception to the child, because his visual sense can never embrace it. The space relations of the different points on the outline in question, can, however, be estimated by means of actual surveys, and these space relations be expressed diagrammatically in a visual image, that is, in a map. It is this visual image which must be presented to the child, in order to excite an idea; it is the map outline which is perceived, and the space relations of its different segments. The visual perception of the map becomes an idea in the mind; its revival in memory, as an internal mental image, is effected by an act of attention.

The third knowledge to be imparted, the date of the landing of the Pilgrims, no longer involves space relations, but relations in time. These are immensely more difficult of apprehension. Relations in space are directly apprehended by the visual sense, or inferred from signs which are directly perceived. But the perception of time is a matter of internal

experience. We know time because we are conscious of a change of our own state; we are aware of a series of sequences in such changes. But how can this inform us of periods of time which lie entirely outside of our personal experience? How can a child be informed, whose experience is so much narrower, who forgets so much even of that experience, and who therefore only has an idea of the shortest series of events? The problem is in many respects analogous to that of calling up a mental image of geographical relations, which can never be directly perceived. This problem was solved by means of a symbol, the map. The symbol itself is constructed by means of a series of laborious inferences from direct space observations, those involved in the process of surveying. In the same way, our knowledge of historical sequences depends upon a complicated series of laborious inferences which are far beyond the capacity of the child, to whom nevertheless it may be convenient to tell the story of the Pilgrims, and the date of their landing. These inferences, to be intelligible to the child, must be represented by means of a space symbol. A date has no meaning except in relation to something before and behind it. This relation of sequence in time can be expressed by a coexistence in space, and as such converted into a visual image, which can pass into the child's consciousness as an idea. The symbol might be nothing but a very long line drawn on the wall, and intersected at suitable proportionate intervals by vertical lines, representing salient epochs, as, the Trojan War, the first Olympiad, the birth of Christ, the discovery of America, the landing of the Pilgrims, and the last Presidential election. [Fig. 11.] Other more complex

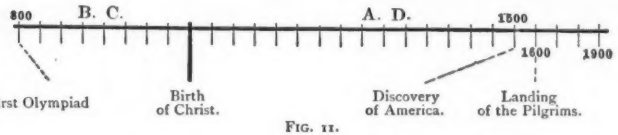


FIG. 11.

diagrams may be used, and Bern's historical charts are admirable. But the single line already suffices to convey the funda-

mental idea of before and after, and without this idea, knowledge of historical dates is an illusion.

I think every one on examining his own mind will notice that the conception of a time period always presents itself as a space tract. We must think of some event from which to date any other event; and therefore at least two ideas must be present in consciousness. But what is simultaneous in consciousness can always be represented as coexistent in space. We only live in the present, and can only think of the past by recalling it into the present. This fact is the foundation for the entire graphic method, which is of such immense importance in modern science. The beatings of the pulse, the movements of the chest in respiration, even the ebb and flow of the body temperature during long weeks of fever, may all be represented on a chart, and thus brought within the limits of a single visual perception. The essential physiognomy of special diseases may thus be imaged. At a glance it is possible to see that one series of curves is taken from a typhoid fever patient, and another from a case of famine fever. For everything is motion: and the stillest form only indicates the direction in which many masses of molecules move.

Our fourth piece of knowledge is the relation of the subjunctive to the indicative mood. This is a specimen of as abstract a kind of knowledge as can be presented to the child. The refined modality of an action, its possibility, its relation to a dozen different mental states, doubt, fear, concession, and the rest,—all this is difficult to convey to a child's understanding. Frequently, on that account, I suppose, such conveyance is not attempted, but a form of words is substituted, to be learned by heart. In Fig. 12, I have tried to show how some of the most salient characteristics of the subjunctive mood can be shown. The parallelogram standing for the subjunc-

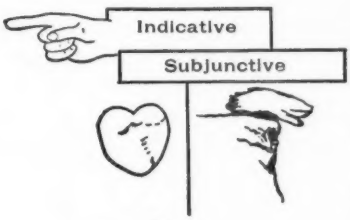


FIG. 12.

tive, is placed below and to the side of the indicative. It lacks the index pointer of the primary mood. The grammars divide the uses of the subjunctive mood into cases of desire and of possibility. I have ventured to symbolize these two cases by hieroglyphic pictures—a heart standing for desire, a falling stone for possibility. This is a return to the primitive mode of written expression, when all words were pictures, and the pictures had not yet been worn away to mere signs. The construction of the diagram symbolizes the mental construction, gives it the material body which seems to be indispensable to definiteness and thoroughness of thought, and associates with the perception of relations an act of volition, by which the relatively faint excitation of the perception becomes broadened, deepened, and diffused in the brain and mind.

The anatomical basis for volition and emotion is really better known than that for ideas proper or their complex combinations. The initial stage of volition is the conception of the end to be attained. This conception is correlated with some nervous process, sustained on the cortex or superficial part of the brain. When a voluntary act is performed, a long tract of fibers is excited—the so-called motor tract, which descends from the ideo-motor region of the cortex to the ganglia at the base of the brain and below it, where the innervations of voluntary muscles originate. When the volition is not at once carried into effect, but remains before consciousness as an intuition, it is supposed that this motor tract is also excited, but less vividly than when an act is performed.

Similarly for emotion, the theories which characterize emotion by the various disturbances in the viscera, in circulation, and in respiration, which are known to accompany strong feeling,[4] may be especially supported by the fact that in the medulla are concentrated nervous foci which preside over all the vital functions; namely, the cardiac, respiratory, and vasomotor centers. Thus, when the pulse or respiration quickens by emotion, we are compelled to assume, as in the case of

[4] The now celebrated theory of Professor James.

volition, that an excitation was diffused throughout the brain, from the cortex to the base. [Fig. 16.]

To secure such massive cerebro-mental action is the fundamental reason for trying to excite feelings, and to suggest voluntary acts to a child, whenever we attempt to generate in his mind a new idea.

I have now drawn this line of thought to a close, and

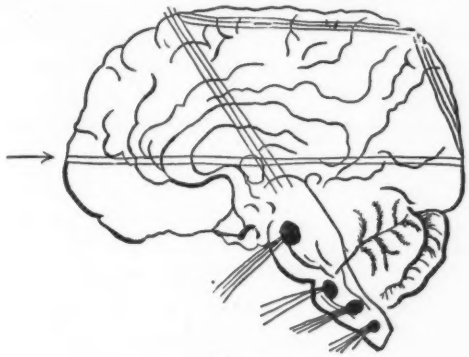


FIG. 16.

will sum up the three or four propositions I have tried to elucidate. I have only touched upon one or two of the most general psychological aspects of education, and have passed by many that might seem especially to call for discussion. Thus I have left entirely untouched the great fact that the child's mind is an organism in course of evolution; that on this account its processes often differ radically from those of an adult mind; and may often be most fruitfully studied along the lines explored by Romanes, who traces the evolution of mind from the lower animals up. Again, I have hardly alluded to the recent experiments in psycho-physics, which some writers seem inclined to consider the most practical and fruitful part of modern psychology. These experiments investigate, in fractions of a second, the time relations of many cerebro-mental phenomena, especially acts of perception as modified by the attention of the subject, or the complexity of the recognition required. Other experiments investigate the

quantum relations between stimuli and sensations; and these again as modified by the attention, or experience—that is, by the previous life of the subject.

Themes like these are equally large and special, and it has seemed better to dwell upon a few more fundamental considerations, which may determine the most general attitude of the teacher toward his charge. I will sum up these considerations as follows:

To the self-consciousness of each individual the mind is a cluster of ideas; to every one else, an aggregate of activities.

The attempt to impart knowledge to a child means the attempt to introduce a new idea into this cluster, or to excite a new activity in this aggregate.

The fundamental fallacy to which educational effort is liable is that of mistaking the presentation of a verbal statement for the effective generation of an idea.

The generation of a new idea in consciousness constitutes an actual enlargement of the area of an individual being. To have an idea is to live an idea, and, therefore, the more ideas the more life. There is no other way known to us of having more life.

Ideas, in the most general sense, are phases of consciousness. They may be divided into feelings and perceptions. The feelings are of external origin, that is, sensations; or of internal origin, when they are either emotions or volitions.

Perceptions are also either external or internal. External perceptions result from a fusion in consciousness of sensations, and are directed either to external objects or to the space relations between them. Internal perceptions are directed either to the revived, that is, the ideal, feelings of things, or to the relations between these revived feelings or ideas. When combined they are called concepts.

Relations of time can only be appreciated as feelings of conscious change of personal condition. Outside of ourselves we never know time, but only space. A series of sequences in time, therefore, to be vividly appreciated, must always be expressed as a group of coexistences in space.

The perception of a sensible object, which is the foundation of all knowledge, remains the permanent type of all knowledge. Internal perception of general concepts and abstract ideas can be guided by study of external perception of concrete things.

Two things are essential to each perception: multiplicity of impressions, and their fusion into unity at some focus to which they converge. The fusion of sensations into sense perceptions can be plausibly traced in nerve tracts of the brain. The fusion of perceptions cannot, at present at least, be so traced. We are compelled to speak of a fusion in consciousness, at a mental focus.

Distinct thought always implies fusion of multiple mental impressions into a unique pulse of thought. Each pulse of thought occupies the center area of consciousness for a given moment of existence, however brief.

It is essential that all impressions made from without upon the child's mind should be made to converge into this unity. If no new pulse of thought be generated, the impressions have failed to affect the mind. As is commonly said, either they are not understood, or they are forgotten.

The most comprehensive aim of education is the development of power, the generation of force. The educational subject must be able to think more, feel more, do more than he who is not educated. The efforts of education must constantly be limited by the conditions imposed by heredity, and the amount of nervous energy originally possessed by the child. But within these limits there remains a wide range of possibility.

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II.

THE PRESENT CONDITION OF GERMAN UNIVERSITIES.[1]

There are in the German Empire twenty-three universities. With a few exceptions these are constituted with four faculties each—theology, law, medicine, and philosophy. Of these exceptions, Popplesdorf has but one faculty, agriculture; Münster and Braunsberg have two, theology and philosophy; Bonn and Breslau have five, theology being divided into Protestant and Catholic; Munich has five, a faculty of political science being added; Tübingen has seven, theology being divided, and faculties of political and natural science being added. Heidelberg has just created a separate faculty of natural science. In the summer semester, 1890, there were in German universities a total number of 29,317 students. The entire teaching force numbered 2437, divided as follows: ordinary or full professors, 1063; extraordinary or associate professors, 524; honorary professors, 63; docenten or tutors, 649; language and sword masters, 138. Thus the entire body of the universities was 31,754, or an average of 1380 persons to each institution. The annual salary which ordinary professors, or heads of departments, receive from the state, varies with different sections, faculties, and universities. In Prussia the average is as follows: In law, 6043 M.; in theology, 5718 M.; in philosophy, 5568 M.; in medicine, 5301 M. But Göttingen pays her law professors 12,600 M., and Berlin her philosophical and theological professors 12,000 and 10,200 M. respectively. To these amounts are to be added the fees collected

[1] In addition to personal experience and correspondence, information has been derived chiefly from the *Deutscher Universitäts Kalender*, published semi-annually by Prof. Dr. F. Ascherson, Berlin; the *Akademische Blätter*; the *Akademische Monatshefte*; Kürschner's *Staatshandbuch*; *Statistisches Jahrbuch der höheren Schulen*, and the *Personal und Vorlesungen Verzeichnisse* of the present year. As the sources are not always in accord, the results are often approximate only.

from those who attend the professors' lectures. The extraordinary professors receive from the state about one-half the amount paid to the ordinary, while the tutors depend solely on their class-room fees.

It is often supposed that foreign students are a large factor in German universities, yet there are only about 1000 foreigners in attendance. About one-third of these are from North America. It would be interesting could one determine what proportion of the 29,317 students finish the university course by taking a degree, but the German student is so mixed up with the state by service and examination, and the statistics are so imperfect and difficult to obtain, that it is quite impossible to attain any exact result. It is clear, however, that not more than one-fourth of the students, probably not more than one-fifth, are granted degrees. A small but interesting element in the question concerning the uncrowned studenthood is that all who make for degrees do not make them. The question as to how large an element this is, as well as the question of the distribution of the degrees among the different grades for dissertations and examinations, cannot be answered in many cases. Out of 741 *examinations* held in four of the best universities no first grade degree was given, but of the second grade there were 36, of the third grade 270, of the fourth grade 153, and 282 failures. Some universities and some professors seldom or never give first grade, others give it only for original investigation which is of positive value, while others are careless in the matter. These figures are not to be taken as representative but merely as suggestive.

The following table shows the numerical constitution of the twelve leading universities in the summer semesters of the years 1878, 1885, and 1890.

	Years.	Berlin.	Bonn.	Breslau.	Erlangen.	Freiburg.	Göttingen.	Halle.	Heidelberg	Leipzig.	Munich.	Tübingen.	Würzburg.	Totals.
Lecturers	1878	215	100	106	64	57	120	107	110	160	136	88	66	1329
	1885	278	118	128	59	73	117	108	101	175	152	91	68	1468
	1890	335	125	136	61	91	122	129	120	194	170	89	77	1649
Students	1878	2569	1063	1240	415	418	988	914	750	2861	1364	1137	922	14641
	1885	4465	1251	1422	811	1144	1017	1600	957	3075	2825	1422	1291	21280
	1890	4781	1424	1308	1006	1254	928	1626	1089	3177	3551	1422	1612	23178
In Theology	1878	150	175	179	140	30	94	203	34	366	86	427	140	1963
	1885	600	200	332	402	85	199	598	65	699	119	592	203	4094
	1890	698	295	397	290	203	245	721	91	577	150	594	144	4413
In Law	1878	888	312	369	50	119	309	125	410	958	413	354	102	4409
	1885	937	303	190	103	263	179	118	302	610	1006	389	145	4545
	1890	1235	305	231	213	305	197	133	327	936	1497	453	330	6162
In Philosophy	1878	1185	422	584	93	79	472	469	203	1222	409	192	205	5535
	1885	1856	497	503	87	322	435	568	325	1104	571	199	159	6626
	1890	1664	424	350	144	293	272	464	321	770	523	112	141	5478
In Medicine	1878	346	154	178	132	181	114	117	103	335	456	164	475	2755
	1885	1072	311	397	219	474	204	316	265	662	1129	242	781	6075
	1890	1184	400	330	359	453	214	300	350	894	1381	262	997	7124

This table, for the most part, explains itself. I may mention a few points which it suggests but does not make entirely clear. It is evident that the growth of the universities in numbers is remarkable, but when *all* the universities are considered, the advance is still more striking. The attendance on the universities has doubled, while the population of Germany has advanced about sixteen per cent. In the last twelve years the universities have added nearly fifty per cent. to the number of students. This alarms the Kaiser, who agrees with Bismarck that the danger of Germany lies in the existence and rapid growth of a "learned proletariat," "candidates for hunger," as they are termed, and this is one of the arguments he urges for un-humanizing the Gymnasien. That such a class exists, and has existed for many years, there can be no question; it is a large factor in journalism, and is responsible in part for Germany's large annual output of books. But our table shows that Göttingen has sixty students fewer than ten years ago, while Breslau has lost 114 students in the last five years. The small advance of Berlin in this latter period will be, perhaps, more noticeable. The attendance at Berlin during the past

three semesters was, chronologically, as follows: 6187, 5731, and 4781. This means that Berlin has lost 1406 students very recently. The fact is often overlooked, that Berlin has each semester from 1800 to 2000 nominal attendants upon lectures who have no more connection with the university than with the theaters which they attend, and it is seldom noticed that Munich has much larger numbers in jurisprudence and medicine than Berlin. I asked a well-known professor how he explained this numerical superiority of Munich to Berlin and Leipzig. He replied: "They have in Munich a professor who draws more students than any other in all Germany—Professor Beer." Berlin's attractions are different. They lie not altogether in the faculty of the university but in the city itself. Berlin is the nerve-center of social, material, and imperial Germany, and her libraries, especially the Royal, are in every possible respect superior to any others in Germany. As Berlin is the nerve-center, her university feels most the reaction, in attendance on universities, which has taken place in the last three years. That there has been an effectual check on growing numbers there can be no question. The total number of students in each of the last six semesters is as follows: 29,190, 28,923, 29,491, 29,007, 29,317, and at present (1891) 28,711. The rapid growth began in 1870 and continued to 1887. Erlangen is the only university that makes noticeable headway against this recoil, although Leipzig in the present semester has five students more than ever before.

Glancing at the table, it is seen that in the last twelve years there has been a large increment in the teaching force and in the number of students; the absolute gain in the former being 320 and in the latter 8537. Moreover, while theology has made an absolute gain of 2450, law of 1753, and medicine of 4369 students, philosophy shows a loss in twelve years of 57, and in the last five years a loss of 1148 students. The difficulty of accounting for this condition is augmented by two important considerations. (1) Almost the entire increase in the teaching force in the last twelve years (I speak of professors), has been in philosophy. In 1878 the faculties stood

in the following proportions and relations: theology 8, law 13, medicine 21, philosophy 51; and in 1890 they stand 8, 12, 21, and 60. Thus, while the faculties of theology, law, and medicine have remained about the same in the larger universities, the philosophical faculties have each added about nine members during the last twelve years. (2) While theology, law, and medicine are professional and clearly defined departments, philosophy covers any phase of knowledge which remains after these departments are subtracted. Thus we find in the universities, which have four faculties, the following sub-divisions under philosophy: philology, Oriental, classic, and modern; philosophy, including history, pedagogy, geography, and political science; natural sciences, including mathematics and astronomy; and art and archæology. Considering that the philosophical faculty comprehends all the natural sciences, supplies nearly all the teaching force of the Gymnasien, and covers the curriculum of the best American colleges, it is somewhat difficult to account for the falling off of students in this department while they have continued to increase in the three other departments, and while nearly the whole increase of professors has been in the philosophical faculty. The increase in the teaching force can be partially accounted for by division of labor and the introduction of new chairs in geography, political economy, and natural science. The diminution of students is due in part to the overcrowded condition of the teaching profession and to the present low condition of philosophy and philology. The faculties of philosophy are large and strong throughout Germany, but in the last few years there has been so rapid a decrease of students that at present the ablest professors complain of the small number of their hearers. Dr. J. Hutchinson Stirling is at much pains to show that philosophy ends with Hegel. This is admitted by many German professors, but in a sense very different from that which Dr. Stirling urges. The speculative period of German philosophy is dead, says Professor Jodl, and we believe there are not many who dispute him. Nevertheless it appears to have been Hegelianism rather than Hegel that "disgusted

Germany with speculative philosophy." Of the 137 students studying philosophy in Leipzig, 80 are foreigners, and the proportions are not much different throughout Germany.

The following table shows the distribution of hours per week given to those subjects which more than five-sixths of the American students are studying in Germany.

Subjects.	Berlin.	Bonn.	Breslau.	Erlangen.	Freiburg.	Göttingen.	Halle.	Heidelberg.	Leipzig.	Munich.	Tübingen.	Würzburg.	Totals.
Old Testament	27	27	26	11	6	5	16	16	25	8	7	10	184
New Testament	25	19	32	15	6	19	22	9	25	9	17	9	207
Theology	27	31	38	15	36	19	34	16	32	17	15	16	296
Church History	22	35	28	17	14	20	19	16	17	8	17	11	224
Roman Law	52	34	25	18	22	29	28	32	44	35	29	26	374
Other Law	145	53	59	59	56	52	52	55	80	67	41	38	757
History of Ancient Philosophy	12	8	4	2	2	3	3	..	7	6	4	4	55
History of Modern Philosophy	15	8	3	4	..	4	4	6	9	5	5	1	64
Systematic Philosophy	22	10	15	2	4	14	7	8	29	27	15	9	162
Ethics	10	12	7	4	10	5	6	..	9	6	10	6	85
Pedagogy	6	6	..	..	..	1	6	2	17	..	..	4	42
Political Economy	22	13	27	17	23	11	13	25	26	..	40	7	224
Ancient History	19	14	8	..	8	11	15	8	14	..	4	10	111
Modern History	20	13	14	6	12	13	13	19	20	22	16	8	176
Classical Philology	50	35	42	28	30	45	46	40	87	35	22	36	406
Modern Philology	46	32	31	16	16	13	24	17	38	26	17	9	285

This table shows the number of hours given per week by professors, exclusive of Docenten, in lectures and seminars. In using the terms Ancient and Modern, I take the close of the thirteenth century as the boundary line. Under ethics, theological ethics are included, and in classical philology the small fraction of Oriental philology. The schedule cannot be regarded as exact, for the freedom and flexibility allowed in the German university are disturbing elements when statistics of instruction are regarded. Not all the courses advertised are given, and it often happens that a professor substitutes another course for the one announced. The same difficulties are even greater as regards seminars. But the student may expect at least one well-conducted seminar, provided the university shows more than ten hours per week on the subject in question. It is also to be noticed that the German university, while nominally in session for nine months of the year, affords in fact not more than six months of active service. Vacations

and holidays, in connection with the difficulty in beginning, and when begun to keep going, reduce the winter semester to four and the summer semester to three months.

The theological faculty of the German university, taken as a whole, is a conservative, alert, hard-working body. Apart from the increase in students, its power and position are about the same as they were thirty years ago. It would be as erroneous to characterize German theology by certain Radicals, as to make Strauss and Feuerbach stand for German philosophy and religion. The professor has always taken an active interest in political matters, usually on the side of a State Church. To attack the church is to attack the state, as has been recently shown by Egidy's exit from the army on account of his "Ernste Gedanken." Questions concerning Jews, Jesuits, and heretics are numerous enough to keep theology alive at all points. Just now the proposition to repeal the laws against the Jesuits has drawn forth a score of pamphlets. Even as I write, an anti-"Anti-Semitic Society" is being formed, with some of the strongest names in Germany, such as Gneist, Windscheid, von Ihering, Gustav Freytag, and Paul Heyse, in its lists. It is sometimes said, that at present theology is becoming more practical, and that the Old Testament is receiving much more attention. So far as the statistics of the last twelve or fifteen years are concerned there is no ground for either statement. Even considering Docenten, there is no change in the proportion of time given to the Old Testament, ethics, or pedagogy. In Catholic universities, as Munich, Freiburg, and Würzburg, or where the faculties are mixed, as in Bonn, Breslau, and Tübingen, more attention seems to be given to the ethical, legal, and historical elements in theology. Of the 5494 students of theology, 4273 are Protestant and 1221 are Catholic. The strongest theological faculties are in Berlin and Halle, the latter having nearly one-half of its students in this department. Celebrated names do not appear to have much influence on the distribution of theological students. The loss of Delitzsch did not much lessen the number in Leipzig, the removal of Harnack to Berlin did not at all affect the attend-

ance in Giessen, while the numbers increased in Göttingen upon the death of Ritschl.

The most noticeable feature in the law faculty is the large proportion of time given to the exposition of the Pandecten. Out of a total of 1131 hours per week, 374 are given to Roman law, leaving but 757 hours for canon, civil, criminal, municipal, international, commercial, constitutional law, and the history and philosophy of these branches. A partial explanation of this is that Roman and German law are so vitally connected that the codes of the different states are to a great extent expressions and applications of the principles of the Pandects. The disproportion nevertheless does not admit of rational justification. A learned jurist remarks: "Even at the present time our young jurists, when they leave the university, know absolutely nothing except to parrot Roman and German law, and only very recently, in a very few universities, do they hear even once a sound from other worlds." This is but a mild statement of a wretched condition. Nasse, Holtzendorf, Meyer, and Lorenz all agree, that, with the exception of criminal and canon law, the students of the universities are thoroughly ignorant of public law and the science of politics. In all countries political science has lagged far behind the data of history since the American and French revolutions, but nowhere has there been less done and less disposition to do anything in this department than in German universities. With the possible exception of Tübingen, there is no German university that can be compared to Columbia, or even to Yale or Harvard, in respect to the instruction offered in political science. This explains why one seldom meets an English or American student of law in Germany. It is hoped that in a few years the codification of German law will be complete, and that as a result not only less time will be given to the Pandects, but more attention to legal and political history.

The department of medicine is the leading one in the universities, and shows the greatest advance in the last twelve years. If we except philology, which is a section of philosophy, one may say that medicine is the department in which

Germany is best rated. There are at present (1891) a total of 8776 medical students in the universities. Munich is undoubtedly the strongest center. Würzburg and Kiel are also very celebrated as medical schools, more than one-half of their students belonging to this department. Vienna, perhaps the best school in Europe, is pressed closely by Edinburgh, which has as many medical students as Berlin and Leipzig together. Copenhagen, however, promises to be a competitor for the first place, especially so far as faculty and accommodations are concerned.

The philosophical department is to foreigners the center of interest. More than one-half of all foreign students, and at least three-fourths of all American students, are registered under this faculty. Of the 69 American students in Leipzig, 60 are studying under the philosophical faculty, and 34 of these are registered in the section of philosophy. Taking all the universities together, the following order of subjects indicates the interest of the American students: philosophy, philology, natural science, political economy, history, and pedagogy. Of the subjects growing in importance one may mention political economy, geography, ethics, and physiological psychology. In all of these the historical features of the inductive method are emphasized and each contains a large amount of what passes under the general term anthropology. Economics is treated historically and systematically, but much of the so-called systematic work is purely historical, and a close connection is always made between history and politics. Dogmatism and *à priori* utilitarianism or egoism are not important features of instruction. While political economy has closely associated itself with history, geography has broken away from its Gymnasial bonds and made itself an independent department in most of the larger universities. The same may be said of psychology, which for centuries was mixed up in an indefinable manner with logic and metaphysics. The present effort is to separate psychology from philosophy and make it a purely experimental matter. What the result of this effort will be no one is as yet in a position to declare. For more than a century ped-

agogy in Germany has been trying to find a psychological foundation, but with no results that seem very remarkable. The call for better methods is louder than ever before, and difference of opinion as to how they are to be obtained no less rampant. The best work is probably being done in Leipzig, Halle, and Jena. The dualism in Pestalozzi and Herbart seems to disappear in the present chaos. Professor Rein of Jena, who is the head of Herbartianism in Germany, finds no essential antagonism between Herbart and Pestalozzi, and regards their theories as different stages in the history of the same system.

Passing over philology, which on the part of faculties is the strongest and most excellent feature of German universities; passing over history, which is the weakest and avowedly the most unsatisfactory feature, I may notice a few points concerning philosophy in general. In time given, the history of ancient stands to the history of modern philosophy as three to four. But this three-sevenths of time is given entirely to Greek philosophy. Patristic and scholastic philosophy are almost entirely overlooked or ignored. A large part of the time remaining is given to German philosophy. English philosophy from Bacon to Hume, is by no means neglected, but it is for the most part regarded as an introduction to Spinoza, Leibnitz, and Kant. In systematic philosophy the Germans give much attention to "Introduction to Philosophy," which is generally followed by logic, psychology, and the history of philosophy. Psychology stands foremost. In some universities it is given eighteen or twenty hours per week, while experimental psychology in Leipzig, Tübingen, and Freiburg allows as much time in the laboratory as the student is able to give. After these subjects, in order of prominence, come epistemology, metaphysics, ethics, history and philosophy of religion, philosophy of law, and æsthetics. It would be difficult to indicate the best universities for the study of philosophy without making some limitations. Heinze and Wundt in Leipzig, Sigwart and Pfleiderer in Tübingen, Windelband and Ziegler in Strassburg, Diels and Paulsen in Berlin, are all leading men in their several departments. These universities,

in connection with what lies nearest to philosophy for the American student, may stand in the above order of merit, but the library advantages of Berlin are so superior that Berlin is justly regarded by many as the best center for independent study. The seminar system, taken up from the Jesuits, has been carried to greater perfection in Germany than in any other land. At present it is by no means peculiar to German universities, although the most valuable feature in them. The subjects most often considered in philosophical seminars appear to be Spinoza, Kant, Aristotle, Schopenhauer, Plato, Locke, and Lotze, and as a rule such seminars are admirably conducted.

In regard to the advantages and disadvantages for American students in German universities there is a great diversity of opinion. My own observations have on the whole made me somewhat skeptical regarding advantages. The argument from economical grounds does not appear to be of much force in favor of Germany. The rise of prices in the last two years has been great enough to alter the conditions which formerly obtained in university towns. If a student will live here as he lives in the eastern part of America, the expense will not be less, save in the item of amusements. It is true that students do live in Germany very inexpensively by submitting to very inferior accommodations. It has been shown that a man and his wife can exist for $600 per year, but such an existence as this entails is quite as possible in Boston or New York. From university statistics and personal inquiry I find that the necessary expenses of a frugal, rational student in Berlin or Leipzig are at least 1821 marks, or about $450. No student should attempt a year in Germany without adding $100 to this amount, and few will find themselves unfettered who do not allow $650 for the entire year. The majority of American students in Germany are there for a definite purpose, are very hard workers, take a high stand among their German fellows, and are favorably regarded by the professors. The general advantages which accrue from foreign study and travel are perhaps greater in Germany than in any other

country. Her art treasures are great, her historical monuments are numerous, her people are genial, kind-hearted, and ambitious. She has much in common with us; we are both Teutonic, and this persists through time and space. Berlin is New York half awake, and should an American be half asleep he might mistake the former for the latter. But, recurring to the question of universities, the advantages are not so apparent. In the last fifteen years, American universities have advanced so much and the German so little that the old gulf between them is closing up, perhaps is closed up for American students, in all departments save philology and medicine. There is a general and almost impregnable superstition in America, and even in Great Britain, about German universities and scholarship. I believe that four out of every five students who have been more than one year in the German university will ultimately justify their sojourn there on the ground that a German degree is worth more and counts for more than an American degree. And this is strictly true. American colleges and universities, with some few exceptions, are so reckless in distributing their paper that there is not a single degree given in America that necessarily means anything. A degree from a first class German university means something definite and becomes more definite by being itself graded.

MATTOON M. CURTIS.

LEIPZIG, GERMANY.

III.

THE AMERICAN HIGH SCHOOL. (I)

The High School is the culmination of the American common school system. Its main office, though not its only function, is to serve as the final stage in the course designed to prepare boys and girls for entrance upon the duties of active life. Taking its pupils from the elementary schools at about the age of fourteen, when by nine years of previous school life they have acquired a considerable store of facts, and have gained some facility in the use of their mental equipment, it proceeds to organize and co-ordinate their loosely aggregated knowledge, to give strength and precision to their mental faculties by supervising the acquisition of other and more complex trains of facts, and also to develop additional powers, especially those involved in the processes of reasoning. For four rich years this work is carried on, till the pupils are sent forth at eighteen or nineteen, in the bloom of their youth, to make for themselves practical applications of the principles which their teachers have aimed to inculcate.

That schools of this general nature are a necessity to civilization scarcely needs a word of proof. A glance at educational history shows that such means of culture have been demanded and provided whenever and wherever education has been highly valued. It is claimed that they were common in the principal towns of Scotland as early as the twelfth century. Professor Payne has pointed out the significance of the fact that the English Public School, the French *Lycée* and *Collége Communal*, the German *Gymnasium* and *Realschule*, the New England Academy, and the American High School are all intitutions of the same general type and fulfill the same general function. It is, indeed, worthy of note that this institution meets the intellectual needs and aspirations of three such races as the Anglo-Saxon, the Teutonic, and the Latin—the domi-

nant races of the world. Nor is the period of time through which this kind of school has lived and flourished devoid of meaning. Eton was founded in the fifteenth century, Harrow in the sixteenth, and early in the seventeenth century Comenius, the greatest educational benefactor of continental Europe, introduced the Gymnasium into his plan for universal education. Over so wide an area, then, and through four centuries of history, this idea has had a trial, and in point of vigor and general acceptance its latter days are its best days. Is not this at once a most convincing proof of its utility and necessity, and a prophecy of life and honor long to come?

HISTORICAL SKETCH.

The American High School is less than a century old. It is true that the Public Latin School of Boston, the oldest existing High School, which admirably represents the classical side of secondary training, has a history of continuous service for two centuries and a half; but in its earlier years it was rather a grammar school, so called, than a free, public High School. To Boston, however, belongs the honor of establishing, in 1821, the first typical High School, the English High School, an institution peculiar to the present century, representing the best English education. Five years later, in consequence of an enactment by the Legislature of Massachusetts, other High Schools began to spring up in that State. These numbered fully a dozen before the idea was adopted by any other State. In 1837 Philadelphia founded its Central High School, and in 1839 Baltimore established its City College (a boys' High School). These city schools were for boys only. An attempt was made by Boston, in 1826, to open a High School for girls, but after a single year "the enterprise was abandoned because of its great success; to give such an education to both sexes involved too great expense." This honor was left, therefore, to some of the country towns,[1] and to Philadelphia, which city, after trying for three years its experiment with a High School for boys, established, in 1840, a simi-

[1] New Bedford, in 1827, opened a High School for both sexes.

lar school for girls. Providence, in 1843, on opening its High School, received both boys and girls. It was not until 1849 that New York founded its Free Academy, now known as the City College.

Though so modern an institution, the High School is the outgrowth of two ideas which are as old as the founding of New England: the responsibility of the State for the education of its children, and a high regard for liberal education. In the fifth year of the settlement of Boston (April 13, 1635), the people, in town meeting assembled, requested "Brother Philemon Purmont to become schoolmaster for the teaching and nurturing of children," and voted him in part pay for his services thirty acres of land. A garden plot was also granted to "Danyell Maude, schoolmaster." These men are thought to have been respectively the first public and private schoolteachers in the colony. But the schools of that time, while free in the sense that all classes were at liberty to send children to them, and public in the sense that the people's money assisted in the support of them, were not what we now term free public schools. Their main support came from the fees paid by the parents, and not from public funds.

In the year following (September 8, 1636) the General Court of Massachusetts voted the sum of four hundred pounds, a sum equal to the entire annual revenue of the colony, "toward a school or college." This assembly, over which Sir Henry Vane presided, is believed to have been "the first body in which the people, by their representatives, ever gave their own money to found a place of education." The founders of the American nation are thus seen to have felt a responsibility for education in its higher as well as in its lower aspects. The Massachusetts School Law of 1642 laid upon the several towns (townships) the responsibility for "the training up of children in learning and labor." But it was in 1647 (November 11) that the school system of the colony—the earliest system established by any community in the new world—had its real birth. In the enactment of that year occurs the following reference to the germ of the modern high school:

"And it is further ordered that where any towne shall increase to the number of 100 families or householders, they shall set up a grammar schoole, the master thereof being able to instruct youths so far as they may be fited for the University; provided that if any towne neglect the performance hereof above one yeare, then every such towne shall pay five pounds to the next schoole, till they shall perform this order."[2] A similar code was enacted in Connecticut three years later.

The "grammar school" thus provided for was an institution that grew up alongside of the earliest colonial colleges, and sometimes antedated them. Such schools were intended to prepare their pupils for the colleges by supplementing with a classical training the meager elementary instruction received in the lower schools and at home. Latin, Greek, and mathematics were their main studies, and in early times seem to have been thoroughly taught. Mather, in his *Magnalia*, says: "When scholars had so far profited at the grammar schools that they could read any classical author into English, and readily make and speak true Latin, and write it in verse as well as in prose, and perfectly decline the paradigms of nouns and verbs in the Greek tongue, they were judged capable of admission to Harvard College." This standard speaks well for the early scholarship of both "grammar school" and college. These ancient preparatory schools derived their name and typical character from the old cathedral grammar schools in England, or the cloister schools of the monasteries. They were in New England, however, intensely local, and only in rare cases sufficiently well supported or endowed to become permanently successful. The Boston Latin School and the Hopkins Grammar Schools at New Haven and Cambridge were among the earliest and best representatives of these local fitting schools; and Ezekiel Cheever, first at New Haven (1638) and finally at Boston (1708), was the most famous "master." The time came, however, when classical culture

[2] *Massachusetts Colonial Records*, vol. ii, p. 203. It is interesting to note that this penalty of "five pounds" was equivalent to the work of a common laborer for two hundred days. By 1718 it had been increased to sixty pounds.

suffered a decline. It was preserved in part by the one learned profession, that of divinity, but even in this profession the standard of classical attainments sank lamentably low. Near the middle of the eighteenth century a better day began to dawn. In particular, the founding of the Dummer School, at Byfield, Mass., in 1763, and the coming of Samuel Moody as master, mark a new era in American classical instruction.

The long and successful career of Master Moody at Byfield directly led to the establishment, near the close of the Revolution, of what may be termed the three oldest academies, the Phillips Academy at Andover, Mass., the Phillips Exeter Academy at Exeter, N. H., and Leicester Academy in the Massachusetts town of the same name. Each of these originated as foundation schools established by eminent civilians; but they differed from the grammar schools in granting no special advantage to the towns in which they were located. This distinction seems to have been at first the leading one separating the ancient grammar school from the New England academy, but there was a further difference in that the academy was not of necessity a preparatory school for college. Professor Boone is of the opinion that these academies were modeled upon the English academies established by the Dissenters after the passage of the Act of Toleration (1689), in compliance with a suggestion of Milton in his *Tractate on Education.* They certainly were independent institutions, unlike the grammar schools, and had extended courses. They rapidly multiplied, especially in New England and the Middle States, and by the beginning of the present century were to be found in almost every State in the Union. The British academies were framed after the pattern of the great public schools,—Eton, Rugby, and the like, —where the children of the aristocracy were trained; but their American successors soon became closely adapted to the needs of the democratic communities which created them. They were kept near to the people, breathing the spirit of the time. They flourished during the last quarter of the eighteenth century, and well into the nineteenth. At first, we have seen, they were founded by endowments. Later, schools of the same

name, and supplying an English education of the same high grade, sprang up in many of the important towns of the East, relying solely upon tuition fees and having a somewhat intermittent existence. Their patronage depended mainly upon the local popularity of the teacher. In general, the teachers of the academies in their palmiest days were among the finest scholars and ablest instructors in the land. These institutions were, and are, well adapted to serve as agents of secondary education for sparsely settled communities. But after population began to assemble in the large towns and cities, they, too, suffered a decline, and were replaced in great measure by public High Schools. Not all have disappeared, however, but some are thriving as preparatory schools, others as denominational schools, and still others are the main dependence of rural communities for the supplementing of elementary education. It is evident, however, that the academy can never resume its old place as the chief secondary school for the American people.

The High School is one of the many products of the seething conflict of ideas which prevailed in the first third of the present century. For this period was one of great change and abundant growth. In the four decades following the adoption of the Federal constitution, population had trebled. The cities had increased from six to twenty-six, and now (1830) contained one-sixteenth of all the people. The original thirteen States had become twenty-four, and their original area had expanded five-fold. Commerce and manufactures were feeling the impulse forward. Canals threaded the country for sixteen hundred miles, and railroads grew from the four miles at Quincy in 1826 to a thousand miles in 1835. In intellectual aspects, also, the nation was experiencing a renaissance. Some thirty colleges had their origin in this period, and in older institutions new departments, as of medicine, law, and modern languages, were added. Where there were but thirty-five newspapers in 1775, not less than a thousand existed in 1830. Professor Boone well says, "In the atmosphere of the Revolution were born and reared statesmen and soldiers; not less

did the years following give scholars and authors and teachers, tradesmen and benefactors, professional and scientific men."

These were days of great diversity of opinion on many points relating to social, political, and commercial progress; but on one point all agreed—that intelligence is necessary to citizenship in a free nation. "In proportion as the structure of a government gives force to public opinion," said Washington, "it is necessary that public opinion should be enlightened." Jefferson held that "the diffusion of light and education are the resources most to be relied on for ameliorating the condition, promoting the virtue, and advancing the happiness of man." Men in public life and in humbler stations alike cherished such views. It was a doctrine of common belief, not a personal opinion alone, which Chancellor Kent expressed when he said that "the parent who sends his son into the world uneducated defrauds the community of a useful citizen and bequeaths to it a nuisance." It was out of such elevated sentiments that by natural evolution sprang the idea of universal, liberal, and public education. In the consequent enthusiasm for popular education, old agencies were made more efficient and new ones were devised, discussed, and put in operation. During these years multitudes of the educational, benevolent, and literary institutions that are now so flourishing, had their beginning.

One marked result of the agitation of these times was the better organization of the State systems of public education which had been established earlier, and the extension of them to meet the demands of the densely populated centers. It was easily seen that to the elementary schools there might well be added larger opportunities for learning, when the number who could avail themselves of such advantages was sufficient to warrant the increased expense. The academies and other private schools of like grade were reaching but a favored few, for tuition fees and boarding expenses shut out the masses. Moreover, the control of such schools was not in public hands. The school officers, elected by the people, preferred to expend the people's money on schools whose

courses and methods of instruction they themselves could shape, instead of strengthening by their gifts establishments controlled by close corporations on previous foundations. Hence sprung up here and there in the cities free public schools, similar to the academies in courses and in actual work, but having an organic connection with the public schools below them. These soon received the name of High Schools. Doubtless the academies were the models on which they were formed, but they were also an expansion of the elementary schools to meet the popular demand for secondary education. They were free in the fullest sense to all; there was no fee to be paid, no social bar across the door. Intellectual fitness was the sole requisite for entrance. They were also public in the broadest meaning of the term, being supported by taxation and controlled by the people through officials especially chosen for the purpose. Such they have ever continued to be.

Allusion has previously been made to the first of these High Schools in Boston, Philadelphia, Baltimore, and Providence. From these urban centers they gradually spread in every direction over the Northern States, and particularly through New England and the regions whither New Englanders had gone. Massachusetts is the only commonwealth which has mandatory legislation relating to the establishment of High Schools. This measure, initiated in 1647, assumed nearly its present form in 1826. It calls for a High School of a certain kind in all towns of 500 families or more, and one of a higher grade in every town of 4000 or more inhabitants. These schools are to be kept ten months or longer each year, exclusive of vacations. The appreciation in which this sort of school is held in the State which gave it birth is shown by one significant fact: all the towns thus required to maintain High Schools are found to have them, and also more than forty others. Of the entire population of the State more than nine-tenths live in the towns and cities maintaining High Schools, and half the remainder, at least, within easy reach of such schools.

Many States have permissive legislation under which the number of High Schools is constantly growing. The policy of certain States, of which Massachusetts and Maine are examples, seems to be to encourage the several towns to create a large number of High Schools, some of them of low grade, and thus to bring these schools within reach of all or nearly all their population. In Massachusetts alone there are 236 schools called High Schools. Ohio has nearly twice as many. Other States, like Michigan and Minnesota, which support by public funds a State University, have legislation which aims to secure the creation by local communities of a smaller number of High Schools, each able to give adequate preparation for entrance to college. More than half the State Constitutions specify High Schools as objects of legislative and general interest. In one State (Georgia) on the contrary, there is a constitutional provision forbidding any except the elementary branches being taught in the public schools at the charge of the public funds. In the North Atlantic States (New England, New York, New Jersey, and Pennsylvania), sixty-four out of every thousand pupils in public schools are in the High Schools. As one goes westward the ratio decreases, and in the South, High Schools are not numerous. There seem to be no statistics at present available by which to determine how many High Schools there are in this country, but there are indications that the number is regularly increasing. One difficulty in the way of exact statistics on this point is the lack, in many States, of any well-defined line, outside of the cities, separating High Schools from those of a lower grade. In numerous rural districts, schools, and even the studies of individuals, are of a mixed primary and secondary character.

THE PUPILS AND THEIR PREPARATION.

The High School in America draws its pupils from all classes of society. In some communities it is the only secondary school, and there is demand for no other. In other localities private schools of similar grade exist, to which for social or denominational reasons the boys and girls of certain fami-

lies are sent in preference. In general it is noticeable that the communities maintaining the best public High Schools are also those which have the best private secondary schools. The majority of High School pupils come from the great middle class of the land, which may be said to include all but the very poor and the very rich. Some seven years ago an investigation was made concerning something over a thousand pupils in the High Schools of Worcester, Medford, Melrose, Stoneham, and East Boston, representing fairly the High Schools of Massachusetts. Of these pupils, 25 per cent. were children of parents who pay only a poll tax, or none at all; 64 per cent. were children of parents taxed for $3000 or less; about 75 per cent. had parents taxed for less than $5000; and but 13½ per cent. were of parents paying a tax on more than $10,000. A recent speaker has estimated that five-eighths of the High School pupils of the country are children of the laboring classes. Certainly many of them come from homes in which the parents make genuine and prolonged sacrifices to secure for their children a much more liberal education than fell to their own lot. On the other hand, it is not unusual to find the boys and girls from the wealthiest families in the town sitting in the High School side by side with children of the workmen employed by those families, and all receiving precisely the same instruction and treatment. The school is thus strongly democratic in its influence, and becomes a nurse of right feeling of class for class, or rather of individual for individual, which is even better. After a score of years of service in public High Schools, attended by both sexes, the writer has yet to see the first instance of serious harm resulting from the association in these schools of young people from families of different social strata. On the other hand, in a land where personal ability is the chief criterion of success, and where class distinctions are so little regarded, and especially where social position is so likely to be altered, or even reversed, within a generation, it is most helpful to the young people of all classes to know their fellows for their real worth. This service to the rising generation is admirably performed in

every community by the public schools, and most effectually by the public High School.

The system of grading which is most common in the public schools assumes five years as the age of entrance to the primary school, and provides nine grades, each detaining the pupil for a year, for the completion of the elementary course. The pupil who should proceed methodically over this course would thus pass from the last stage of the elementary work, *i.e.*, from what is termed the grammar school—to the High School at about the age of fourteen. Practically, however, the average age of entrance in most city High Schools is a half year or a year more; but there are extremes, of rare occurrence, when a pupil enters the high school at as low an age as twelve and as high as sixteen.

By the time of completing the elementary course, and as a preparation for his future High School work, the pupil is supposed to have familiarity with the elements of arithmetic, geography, American history, grammar, including spelling, and the writing of a fair hand. It goes without saying that in many schools this work is well done, and in others but poorly; that in every group of grammar school graduates some are well prepared for advanced study, others have nearly reached the limit of their development, in an academic sense, and not a few have in some part wasted their opportunities. The teaching in lower grades has been improved within recent years, especially in what are termed primary schools, and in many schools the development of power, rather than the mere acquisition of knowledge, is now the main aim. For pupils thus trained the transition to higher grades is obviously less abrupt, and accompanied by less strain, than in the case of children poorly equipped. The school system, however, still needs a closer adjustment at the point of contact between the grammar and High Schools. Evidently this adjustment will be easier if the passage from the grammar school to the High School be in the main a change from the elementary study of certain subjects to the more detailed study of the same, rather than a step from one subject to another which is both more

complex and of a different nature. For some unexplained reason, altogether too few pupils enter the High School really knowing how to study. President Dwight declares that a youth should have learned this lesson at the age of thirteen, but this is an ideal to which there are comparatively few practical responses.

The decision as to what pupils shall enter the High School often rests with the local school committees, and not with the teachers from whom these pupils come or those to whom they are to go. As these committees are elective, it follows that they are sometimes sensitive to the wishes of ambitious parents, and lenient to deficiencies in preparation. They even boldly assert on occasion that all who have completed the last year in the highest grammar grade should, without regard to any tests of fitness, be "promoted" to the High School. But more frequently a judicious consultation of the representative of the committee and the principal teachers of the grammar schools determines the composition of the group of pupils who enter the High School; very rarely do the High School teachers themselves have any voice in the matter.

PROGRAMMES AND INSTRUCTION.

On entering the High School the pupil usually has a choice offered him of two or more courses. If his parents wish him to be prepared for college, his time for the four years will be chiefly spent upon Latin, Greek, algebra, geometry, and the English language and literature, together with other subjects required by the particular college selected; among these may be history, French, German, and physical science. This course is often styled the classical or college preparatory course. It requires four years, at least, and in many schools a subsequent year of post-graduate study is necessary in order to meet the requirements of the more exigent colleges, unless the student has exceptionally good ability and health. The few High Schools which have as their sole work the fitting of pupils for college, withdraw their pupils from the grammar schools two years or more before their elementary studies would naturally

end, and keep them for six years. By far the greater number of High School pupils do not go to college, but pursue what may be termed a general course. This usually includes, in mathematics, elementary algebra through quadratics, elementary plane geometry, and a review of arithmetic; three or four years of Latin; a year of French or of German; a year of general history; a year of physics, or a half year of botany and a half year of zoölogy; a year of chemistry; and a varying amount of study—from one to four years—of the English language and literature. In most schools provision is made for the substitution of other studies for the Latin required in the general course, forming what is often termed the English course. In place of the Latin various substitutes are found, sometimes a modern language, or additional English study, or book-keeping and an increased amount of science teaching. In some schools the English course occupies a year less time than that offering Latin. In a very few schools a briefer course still, often called the business course, covers but two years. This has not been found altogether satisfactory where adopted.

Reference to the published programmes of various High Schools would illustrate the great variety of ways in which the High School idea is working out its evolution. This variety of plans, which must seem so strange to European observers, is a natural consequence of the American doctrine that the responsibility for the schools rests with the local authorities rather than with the central government. The national officers have no control over the public schools in the States. The State governments, moreover, simply see to it that the local communities (towns and cities in the East, and counties elsewhere) establish and maintain schools, but do not usually enforce uniformity of courses or methods, and are not often careful to secure helpful inspection of the schools. The character of the public schools, therefore, and, in particular, of the public High School, registers quite well the degree of culture of each local community. In each case the opinions of the school board determine the course of study for the school. Teachers have

nominally no power in the matter, though virtually they exert considerable influence in the decision of questions relating to the internal management of the school, such as courses of study and methods of instruction. Unfortunately teachers are by no means agreed upon many questions concerning High School courses. From these conditions there can be no result but wide variety. It is doubtless true that the varying interests of communities call for different courses of study in different places, but child nature is so nearly the same everywhere that some degree of unity seems possible, as it certainly is desirable.

The character of the instruction given in American High Schools is by no means uniform. The principals of these schools, particularly in the East, are generally men of collegiate training, and their assistants are usually men and women who, if they have not been to college or a scientific school, have graduated from some secondary institution. The High School teachers commonly receive the largest salaries paid by the town for instruction, and not infrequently represent the union of sound learning with ripe experience in the work of education. In the smaller schools, especially in the South and West, are to be found, on the other hand, youthful teachers whose studies are not yet complete and whose experience is near its beginning. Owing to peculiarly American conditions, very little has yet been done in colleges or normal schools for the provision of men and women suitably equipped for High School teaching—that is to say, having at the outset high scholarship and an intelligent acquaintance with the art of teaching, derived both from theoretical study and from observation of good models. But there are plain signs of a rising public demand in this direction, and preparations are in progress for meeting it.

The High School teachers of the present generation, having worked out the problems of their daily tasks with little help save that which comes from intelligent reading, and from contact with their fellows in school or at educational gatherings, have not all attained ideal success as instructors. They are,

however, progressive in spirit, and, in the main, worthy of the prominence accorded them in educational circles. An inspector in one of the States in which High Schools most abound, says: "Of the High School men of the State, with rare exceptions, all the more striking by contrast, I cannot speak too highly. They are scholarly in tastes and habits, gentlemanly in bearing, cultivated in speech, and thoroughly devoted to their work. I esteem it a privilege to have made their acquaintance. To be in their presence and under their instruction for a series of years is a rare good fortune; and coming, as it does, at that critical period of life when the boys and girls are just creating their ideals of character, it fitly crowns the beneficent influences exerted by the public schools."

The most thorough work is undoubtedly done in Latin. Here the aim is to lead the pupil to observe the form quickly, to distinguish minute differences, through the form to discern the relation, to select the probable from among the possible relations, and finally to clothe the newly discovered thought in the best English words and idioms. This process, calling for close application and unceasing intellectual alertness, results in a true culture. In recent years sight-reading has been given a prominent place in classical instruction, to the immense gain of the pupil. But there is still much plodding in the narrow paths of grammatical drill, without a glance into the more inviting fields of derivation, history, mythology, and *colloquia*. The modern languages are taught mainly by reading and translation, but practice in conversation is on the increase, and the number of schools in which French or German is habitually employed in the class-room, after the first few weeks in those subjects, is not now small. There has been a most salutary revival of interest in the English language and literature within the past decade, resulting both in the extension of the time devoted to the subject and in marked improvement in methods and results. The best schools now require this study in some form throughout the course. Two tendencies prevail: on the one hand to magnify the art of composition as compared with grammatical analysis; and on the other to cultivate an ac-

quaintance with good literature, and a love for it, instead of memorizing historical facts about books and their authors. Much remains to be done, however, before the High School will send forth its graduates equipped with facile pens and ready tongues, able upon demand to use the mother-tongue with accuracy and grace.

In science studies modifications of the experimental method are driving from the best schools the former practice of memorizing text-books with the accompaniment of illustrative experiments. Costly apparatus in natural philosophy and chemistry is being replaced by laboratories more simply fitted with sets of implements by which objects and specimens may be observed and tested by the pupils themselves, who then are trained to record their observations, to draw inferences, to generalize, and, finally, to express with accuracy the results they reach. Similar work is done in botany, zoölogy, and geology. But a vast number of schools are yet inadequately equipped for genuine scientific work, and too many teachers have not yet been taught how to secure such work from their pupils. Scientific study in the High Schools is further weakened by the absence of elementary instruction in natural science in lower grades, and by the undue amount and variety of work usually imposed on teachers of science. Mathematics is universally taught in the three forms of arithmetic, algebra, and geometry. In the first, the aim is chiefly to keep the pupil familiar with numerical processes and to train him in rapid computation. In this the schools are not more than fairly successful. Algebra is better taught and by its severer demands furnishes a valuable discipline. In geometry, attention is commonly confined to plane figures. A marked improvement is taking place in methods, resulting in superior intellectual growth on the part of the more robust minds, but leaving the duller half with little gain. The memorizing of printed demonstrations is giving way before the solving of original problems and the working out at sight of unstudied theorems. In some few schools practical applications are made in surveying. Increased attention is being given to

history, especially in its application to the science of government. The main reliance here is yet upon the reproduction of the text of compendiums of history, but in a few schools teachers use these as mines from which they lead the pupils to draw the materials, and by self-activity to combine them into finished products of historical knowledge. Frequently the study is made objective by an extensive use of pictures, maps, and other helps, and is broadened in sweep by collateral reading. Recitations are devoted not only to the testing of the content of the pupil's mind, but quite as much, by well-selected topics and well-planned questions, to the cultivation of aptitude in discerning historical relations. The study of civil government naturally attracts American boys, who in two or three years will find themselves complete citizens, and scarcely less interests their sisters. Much is done here by object lessons in the legislative halls, council chambers, and court rooms themselves, whither pupils are taken by their teachers to observe the processes of government in actual operation.

On the whole there is a positive tendency to secure in High School instruction the cultivation of the mental powers, and only incidentally to store the memory with facts. The results secured are directly proportional to the scholarship of the teacher and his skill in making the most of his material and opportunities. Those engaged in the work gather some comfort, however, from hearing the men and women of the colleges assert, as they do with earnestness, that they find the instruction in the secondary schools better done than that of the elementary schools.

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IV.

THE EDUCATION OF THE WILL.

All education is, in a sense, education of will. Of course, for scientific exactness, we distinguish will from other activities of mind, and we may for convenience here assume the ordinary psychological division into intelligence, emotion and will; but it is an elementary commonplace of psychology, that, though these activities are distinguishable in thought, they are not to be treated as if they were usually separated in mental life. Will is therefore not to be conceived as an activity in itself, capable of being isolated from intelligence and emotion. In such isolation it is an unreal abstraction, it is merely the abstract concept which physical science finds useful for its purposes under the name of force. As a concrete reality, will is active intelligence stimulated by emotion: or, as it may equally well be described, it is active emotion directed by intelligence.

But whatever may be the general relation of intelligence and emotion to will, there can be no doubt of the practical relation into which they are brought in educational processes. The education of intelligence is an exertion of will in directing intelligence to particular objects; the education of emotion is an exertion of will for the suppression of feelings that are inimical, and the stimulation of those that are favorable, to the well-being of man. All education is thus, in a sense, education of will.

But this very fact implies that will is not to be conceived as a force working *in vacuo*. It must have material to work upon —an object to be willed; and such object or material can be obtained only from intelligence and emotion. Moreover, education does not consist of sporadic, transient acts, that are performed without connection in any rational plan, and without leaving any trace behind. It aims at creating those tendencies which we call by such names as faculties, capacities, dex-

terities, habits; in a word, it seeks to develop a power of performing, without effort and even without thought, actions which at first can be performed only with deliberate attention, if not with painful fatigue. But for this power, life would not only lose all its pleasantness, it would cease. If after performing an action a hundred times it required as much effort as at first, no man could get through his day; he could not meet the most essential wants of hourly existence. This power forms the supreme reward of our educational labor; that is to say, all the excellence developed by education, is of the nature of habit.

But if will is merely an abstract potentiality until it has received its material from intelligence and emotion, it may be asked whether there can be any special education of the will. To answer this it must be observed that, ordinarily in education, we give prominence to the intelligence or emotion which is to be educated. Then the education is intellectual or emotional; it is a habit of intelligence or of sentiment that we are seeking to cultivate. But we may also abstract from what is being educated, and reflect on the educative power—the power that directs the education. We may inquire how that power is itself to be educated, so that it may be applied promptly and effectually to any material of intelligence or emotion. Such an education of the will places the copestone on the whole educational building. It determines the character which forms the guerdon or the doom of every man; for character, as we are reminded in the often quoted saying of Novalis, is a completely formed will.

To get at the processes by which this result is attained we must clear away various scientific problems which are connected with the process, but need not be allowed to complicate the educational problem itself. For educational science does not require us here to go beyond unquestionable facts. It requires as its data merely the fact of voluntary action and the fact of habit, comprehending of course the process by which habit is formed. We do not require to go beyond these facts into the theories by which they are explained in any department of science,

physical, physiological, or even psychological. It is not of course meant that such scientific theories will not enable us to understand more fully the facts which they explain, or to see more clearly the bearing of these facts upon our methods of education. It is meant merely that educational science must not wait for the settlement of disputed theories about volition and habit, it must be founded upon undisputed facts.

This is peculiarly the case with the primary fact—voluntary action. Volition, it is well known, forms the subject of the most intractable problem—the problem which involves all other problems—in the range of human speculation. It is not to be denied that the solution of this problem is of infinite speculative interest in its bearing upon the origin and destiny of man; nor can it be denied that it may be of infinite value in educational practice to know whether a volition is simply a natural event absolutely determined, like any other, by its antecedents in time, or whether, in the act of willing, man comes into touch with an order transcending the order of time, and draws his inspiration from that higher source.

But the educationist cannot shut his eyes to the fact that this problem has not as yet met with any solution which is near being universally accepted; and therefore he must still base educational methods only on such assumptions as will be accepted equally by the champions and by the assailants of Free Will. Now, what is universally admitted with regard to the nature of volition? All are agreed that it is an action done with a view to some end; and this conception will be sufficient for our purposes at present. Before proceeding to an analysis of the conception, it is necessary only to observe further, that the end to which a volition points is generally, or rather always, complicated. The agent not only aims at a simple end which he desires to attain, but he seeks a nearer end or, more commonly, a series of nearer ends, which form intermediate steps, that is, as we call them, means, toward the attainment of his ultimate end. This conception of volition indicates the main steps in the process of educating the will.

I. Obviously the first step is an education of intelligence;

that is to say, the agent must form a clear cognition of the end he has in view, as well as of the means by which the end is to be attained.

1. In very early life end and means alike must be almost exclusively in the region of muscular activity; and an appreciable amount of subsequent educational labor might be saved, if those who have charge of infancy were taught to begin training the child to control his muscles voluntarily almost from the very first. Of course little can be done during the first few weeks of life; almost nothing, in fact, till the power of visual perception has been acquired, because the most valuable movements must be directed by visual images. Even the culture of visual perception, however, might itself be considerably quickened by early training of the eye; for it must be remembered that the complex cognition which we call vision draws an important factor from muscular sensation, and the first step toward distinct vision is the power of voluntarily co-ordinating the movements of the eyes so as to fix them steadily on one point. Something might be done to cultivate this power very soon after birth by holding and moving slowly before the eyes any brilliant object of simple outline, trying to attract the eyes toward it, and to make them follow its movements. There is no reason why training of this nature might not bring on at an earlier date the important achievement of nursery life, by which the child first begins to "notice things."

But muscular control is not guided solely by the eye. Such guidance, indeed, is of the highest value; but underlying all direction from extrinsic sources is that which the muscles receive from the form of sensibility now commonly known as the muscular sense. The educationist may at present overlook the conflicting physiological theories, which profess to explain this sensibility. For him it is enough that we can feel, even when we do not or cannot see, muscular movement. In this sensibility there are vast differences between individuals; and these differences are often congenital, often hereditary. But education can only make the best use of such

natural organization as forms the inheritance of each individual; and it will be found in the long run that the greatest differences are due to the use which each individual makes of this inheritance. The tortoise may at any time outstrip the hare.

It is therefore extremely important to begin the voluntary direction of muscle as early as possible, and an early beginning is all the more important, as without direction a child is sure to strike into ways that are opened up by natural, unthinking impulse. The newborn infant's actions are all purely reflex, and for a long time the activity of a child continues to be mainly of this non-voluntary character. That is to say, the impressions made upon afferent nerves complete their circuit by diffusing their influence along motor nerves, sometimes with a sensation of the afferent stimulus, or (as some hold) of the efferent discharge, but quite as often with no sensation at all. The result is, that stimuli find an outlet in all sorts of unintelligent, aimless directions. This is observable, not only in the meaningless wrigglings of an infant's limbs, but in useless muscular disturbances all through life. You may see it in the comical twisting of features as well as in other needless gestures, with which a boy or even a man often sets himself to a novel task, like the handling of a pen; it startles you at times in the violent and widespread explosions of passionate anger or of uproarious mirth.

The consequence of this tendency is, that a child may easily fall into the wrong way of doing anything, unless he be taught the right way from the first; and therefore in many cases the task of learning is doubled by the initiatory process of unlearning. Accordingly, at this early stage education must help the child to pick out, by his own quickened sensibility, those muscular movements which are adapted to attain each particular end, and to stop at once any current of muscular stimulation that runs in the wrong direction. It is this that makes it so important, on beginning any part of education, such as writing, drawing, singing, playing on a musical instrument, to insist on the right muscular adjustment from the very first lesson; and it is exceedingly injudicious to allow any awkward maladjust-

ment to become fixed by repetition, as is often done in perpetuating, for our own amusement, the pretty mistakes into which a child may fall, for example, in learning to speak.

2. The primary manifestation of will-power in the control of muscle has been described at this length because it illustrates in a simple form the more complicated applications to larger ends, for in these also will implies intelligence for its direction to the ends of human life and the means by which these are to be attained. Here, therefore, lies the value of a general culture of intelligence for the education of the will, because a disciplined intelligence can of course discover more clearly the rational ends of life, and can master more rapidly the most effective methods by which they may be achieved. But power of will implies not only that a man is generally expert in applying intelligence to any object; it requires, for its highest achievements, that he should be specially an expert in the particular sphere in which his will is to be exercised. He must, in the fullest sense, know what he is about; and the language of men testifies to their general experience, that "to know how to do a thing" is identical with "being able to do it." *Can* has kinship with *ken*, *können* with *kennen; savoir faire* is *pouvoir*, and long before the time of Bacon it was a familiar fact, that "knowledge is power."

II. But knowledge in itself is not action. There may be a calm contemplation of an end as well as of the means for its attainment, without any appreciable stirring toward activity. "Axioms are not axioms till they have been felt upon our pulses," said Keats; and the saying embodies an important psychological truth, at least when it is referred, as was evidently intended, to axioms of conduct. Such axioms are not really grasped in their essential nature as practical truths till they have sent a thrill through the emotional life; only then do they become motives of action. It is true, there is a certain class of actions—so-called ideo-motor actions—which are sometimes described as if they followed immediately from a mere intellectual representation without the impulse of any emotion. We need not, however, interrupt our exposition in

order to take account of such actions; for the education of the will would become impossible if they were taken as the type of activity in general. In order to make any action easy and ultimately habitual, it is extremely important to enlist a strong emotional interest by helping the learner to find pleasure in the object sought as well as in the means by which it is to be reached.

The value of this fact is, indeed, at times over-estimated, at least in the training of intelligence and will. All sorts of royal roads to learning, short and easy methods of mastering a science or a language are proposed, as if the pleasurable interest of the process were more essential than the result to be attained. It is often forgotten that the highest excellence, intellectual as well as moral, may be reached only by forcing ourselves to like a subject, forcing ourselves to adopt a course that is naturally uninviting. The wise teacher will, therefore, call the emotional impulses to his aid; but he will be perpetually on his guard against the danger of allowing them to get beyond his control. For, though a useful servant, emotion is a tyrannical master; or, to change the figure, though it may be a kindly breeze to waft the will to its haven, it may become an irresistible storm in which all intelligent volition is wrecked. The undue development of the emotional side of human nature lands in two sorts of faults. (1) It renders men liable to emotional disturbances which may be too violent to be controlled by reason, and may sometimes find vent in directions extremely disastrous to the power of will. (2) But there is an effect which is still more enervating to the will, and that is the degeneration of healthy sentiment into an unhealthy sentimentality. This effect is peculiarly apt to be produced in minds of sufficient refinement to enjoy literature or art, and thus to experience the generous emotions of intellectual and moral life. The mind is then apt to dally with its own pleasurable feelings; an idle dilettantism takes the place of earnest study, and a passive indulgence in the luxury of moral sentiment incapacitates for the active luxury of doing good.

III. These dangers can be avoided only by the culture of

will, in the stricter sense of the term. For a volition implies more than a cognition of an act to be performed, more than an emotion impelling to its performance. These are, indeed, as we have seen, not only important factors of voluntary action, they are its indispensable prerequisites: and woe to the man who cultivates energy of will without the guidance of reason or without the amenity of genial sentiment. For him force of character hardens into that unreasoning obstinacy in which

Stat pro ratione voluntas.

This is that inertia of brute stupidity, against which, we have Schiller's authority for saying, the gods themselves fight in vain. Still, however essential intelligence and feeling may be to will, they do not form an actual volition. It is true, the distinct cognition of an act implies a veritable re-presentation or re-production of it, not only in consciousness, but in a thrill through the muscular region which would be called into play if the act were really performed; and if the cognition is accompanied with emotional excitement, the muscular thrill will show an almost irresistible tendency to pass from a scarcely perceptible twitch into overt action. But the cognition and emotion are not the overt action itself. At most they form the conscious state which is described by words expressive of desire. This state, with its nascent, but abortive muscular throb, has been happily described by Hobbes as "the small beginnings of action"; but it is not action completed. A real act of will implies an additional factor—the fiat which transforms into actual fact what was previously a mere thought of something to be done.

Now, it is precisely because all the preliminaries of intelligence and emotion may be realized, and yet life may stop short of this culminating act, that culture of will, in the strictest sense of the term, becomes such an important factor in education. The fact, that clear intelligence and delicate sensibility may thus be divorced from energy of will, is obtruded with startling distinctness in those extreme cases, not unknown in medical practice, in which the divorce implies a

morbid paralysis of human faculty. In such cases you may find a man, of at least average intelligence and refinement, conceiving clearly what is to be done, and feeling a strong desire to do it, yet utterly powerless to put forth the fiat of will, by which alone his desire can be carried into effect. Phenomena of this nature are fully described in special monographs like Ribot's *Les Maladies de la Volonté*, but they are subjects for the physician rather than for the educationist. They are noticed here merely for the purpose of bringing into vivid relief that crowning fact in human life, which transforms cognition and feeling into an act of will.

It is evident, that, in training decision of character, there are two activities to which it should be directed. The first decides upon the aims of life; the second, upon the means by which these are to be secured.

1. The first requisite of a firm will is an unalterable decision with regard to the object that is to be willed. Of course here intelligence must be called into play in selecting between conflicting alternatives of conduct, and a great deal of fickleness is due to imperfect intelligence failing to see clearly the preponderance of reasons in favor of one course. But, as explained at the outset, intelligence is not a passive state, but a voluntary activity of mind; and therefore a wavering purpose arises, perhaps most frequently from the energy of intelligence never being directed by any earnest effort of will to the practical settlement of the question at issue. Evidently, however, there are men who can, and do exercise their intelligence upon such questions, but without coming to any vital decision. They can never make up their minds, but remain in idle suspense between the rival claims of different courses, for all practical purposes paralyzed in reality as Buridanus fancied an ass would be if placed between two equally attractive bundles of hay. In such cases activity never gets beyond an occasional coquetting with different plans, when the necessities of life force some sort of decision for the moment. For the education of the will, therefore, it is of prime importance, not only to analyze the reasons in favor of different courses, but,

after analysis, and even in spite of speculative doubts, to form a settled determination with regard to the course which is to be practically carried out. Whenever intelligence decides upon a course, the force of the emotional nature may be called to confirm the decision; and it is for this purpose that various artifices have been devised, such as vows, pledges, official oaths, which bind men to their decisions by powerful motives. Any irrevocable act in life, by which a die is cast, a Rubicon crossed, is of value. Such an act becomes, in some cases, an insuperable, in all a formidable obstacle to prevent the agent from looking back after he has put his hand to the plow.

2. But the selection of an end is fruitless, if the means for its attainment are not adopted; and here there is room for a second form of indecision. For there are men who, while recognizing with clear intelligence the superiority and even the obligation of a particular course, remain satisfied with a merely sentimental recognition of the fact. In truth, most men, whatever may be their general strength of character, leave themselves at times the victims of this idle musing over work to be done at some more convenient season; and few reach middle age without finding the track of memory strewn with wrecks of plans which might easily have been carried out by a prompt resolve at the proper moment and by stability of purpose during hours that have been otherwise frittered away. Not infrequently the whole life may thus become an irreparable failure, when a man continues, year after year, toying with pretty ideals which, in a vague sort of way, he intends to realize, but in regard to which he never forms any effective volition. Johnson said truly that the limbo in which such abortive lives find themselves at last, is paved with good intentions.

Now it is obvious that both these forms of indecision in character can be avoided, not by merely letting the will develop itself under any haphazard influences to which it may be subjected, but by adopting, in our educational methods, a specific discipline for its training. You do not learn a science

by merely picking up such facts as may drop on the path of common experience, nor do you learn an art by the occasional clumsy attempts to practice it, which may be forced upon you by the necessities of life. In both cases it is always assumed, as a matter of course, that a special education is absolutely indispensable, and yet this simple fact is to a large extent ignored in our educational systems, so far as regards any provision for training the will. It is true the whole life of a well-conducted school does incidentally involve some invaluable discipline in voluntary control. The regular routine, its punctual observance, the staid behavior within school, the exaction of tasks that are not always agreeable—all this tends to introduce a rational order into the licentious chaos of a young life; and it is in view of this fact as well as for the loss of intellectual instruction that a teacher is very properly regarded as a failure, if he is not a good disciplinarian as well as a good scholar.

But, however valuable the systematic arrangements in the external life of a school may be for developing orderly habits in the internal life of the pupils, it wants the peculiar element that is required for educating the will. Its regulations are imposed by an external authority, and they are obeyed mainly from the conviction that they will be enforced. To a large extent, therefore, positive work is done under the impulse of an external constraint, while the child refrains from natural ebullitions of feeling under the impulse of external restraint. This is illustrated by the disorder which inevitably breaks out in a class whenever it is discovered that the teacher is without the requisite tact for maintaining discipline, and by the explosion of riot which commonly accompanies the dismissal of a school. What is wanted, therefore, is a discipline which the individual imposes upon himself—a discipline in which he forces himself at times to do what is painful or to abstain from what is pleasant, not because the painful act is obligatory in itself, or because the pleasure is in itself wrong, but simply for the purpose of cultivating strength of will.

But not only are our educational methods defective in fail-

ing to provide any such discipline for the education of the will, the whole temper of our age seems to be represented in this defect. In the great industrial communities, especially of Protestant Christendom, rational ἄσκησις has disappeared almost as completely as asceticism. The elaborate system of fasts and penances in the Catholic Church was, in its essential spirit, an admirable discipline for the will. It cannot be denied that the system became corrupted with gross abuses; but without questioning the general gain to the moral life of the world by the protest of the Reformers against those abuses, it may be feared that Protestantism has thrown away a valuable instrument of moral training by abolishing those old penances and fasts without providing any adequate substitute. The corruptions of the mediæval system arose mainly from its publicity, which gave an undue value to the overt action without reference to its spiritual intent. Such publicity ran strangely in the face of explicit warnings which had been uttered by the Great Teacher himself. In the light of those warnings it is obvious that the value of all such disciplines for the training of the will must depend on their internal character. They must avoid unnecessary publicity; they must be conducted so as not to be seen of men. But any human being, who quietly and unostentatiously resolves to deny himself an allowable pleasure, or subject himself to a hardship that is not absolutely obligatory, in order that he may school his will into habits of self-control, is drawing upon the universal fountain of spiritual power, and assuredly he shall have his reward.

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V.

DISCUSSIONS.

THE USE OF TEXT-BOOKS IN TEACHING ELEMENTARY SCIENCE.

The student who desires to learn the properties of a substance or the facts concerning a phenomenon, will derive material benefit from obedience to the precept "Study things themselves, not statements about things." He who would learn a process had best "Learn to do by doing," and thus obtain both intellectual and manual training in his art. His knowledge will in each case be better than if he had simply memorized the facts and processes, and he will have acquired it by the "natural method." These are points in which the laboratory method of teaching elementary science is superior to any other, and if the subject is pursued because of the utility of the facts, it is by far the best method; but the acquiring of facts and the mastery of processes are not the chief ends of education; they are rather the tools which the teacher uses in his work.

Admitting the great value of all objective teaching as an adjunct, it may justly be claimed that that mental exercise which compares and classifies the facts and processes, and without which they do not constitute a science so far as the individual pupil is concerned, is far more valuable. This subsequent work educates the pupil, the laboratory work without it, merely informs him, and the laboratory method will have culture value only in so far as it compels or induces this comparison and classification of phenomena. In all elementary instruction it is essential that the teacher hold the pupil to his work, and that he require of him evidence that it has been done, and that he has given to the subject a sufficient amount of thought to make the words which he uses his own. If the teacher does not do this, it is likely that much of the thinking will never be done, and that the laboratory practice will result only in the amusement of the pupil.

A certain amount of didactic work in connection with laboratory practice will enable the teacher to test the amount of

mental activity which the experiments have induced, and to satisfy himself that the facts are gradually becoming a science, but this method involves great loss of time. The student prepares a lesson one day and recites it the next, and the rate of progress is controlled by the number of experiments that the pupil can perform in one period. Furthermore, if the instruction is limited to laboratory work and recitations about the experiments performed, it will necessarily be fragmentary, not only because of the increased amount of time required, but because many important topics cannot be illustrated by elementary experimentation; in physics, for example, the law of gravitation must be omitted, if the pupil be required to discover everything for himself. The text-book, then, is necessary to the symmetrical treatment of a science, and an elementary treatment should be symmetrical, whether the subject be pursued as a stepping-stone to subsequent special work, or on account of its disciplinary and utilitarian value.

It is claimed by those who would discard the text-book that the imperfect definition framed by the student himself is of more value than the perfect definition learned from a book. Experience shows that the student's attempts are generally misleading and valueless, except as they furnish excellent opportunities to illustrate the time-killing Socratic method of teaching, and the vague knowledge obtained does not compare favorably with the exact knowledge obtained by the pupil who learns the perfect definition, and, after illustrating it in the laboratory, is asked to justify each word. The knowledge obtained by medical students through their work in the dissecting room, which is so frequently contrasted with knowledge of anatomy obtained through the study of text-books, is valuable because it is guided and rendered complete by a text-book. Could the medical student afford to dispense with his text-book on anatomy?

Whatever objections may be urged against the text-book, it has not yet outlived its usefulness, for the results yielded by the laboratory method cannot equal those obtained from a combination of the text-book and laboratory methods. The text-book gives the pupil a broad view of the subject, looking through the author's eyes, and he thus obtains what is unquestionably desirable in elementary instruction, namely, a view of the subject in perspective. There is no part of the pupil's work which leads him to see the exact relationship

between one topic and another as clearly as a thorough review at the close.

Unfortunately our elementary text-books are not without their faults. Few authors give enough attention to the logic of the subject, few show the student why scientific men have reached a given conclusion or have adopted a given theory; and many authors, wishing to compel the student to think, sacrifice their clearness of thought and definiteness of statement on the altar of this principle of pedagogics, and in endeavoring to "leave a little for the pupil to think," set a task which he cannot perform.

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Any discussion of the relative value of different methods of instruction must be based upon an agreement as to the aim to be accomplished. Education has been aptly defined by Joseph Payne as "The training carried on consciously and continuously by the educator, and its object is to convert desultory and accidental force into organized action." It is a generally accepted principle that the work of the educator consists only in bringing the pupil into such conditions and surrounding him with such influences as will call forth the kind of activity which the teacher is seeking to develop, and that it is only what the pupil does for himself that gives him strength and independence of thought.

Acting upon this principle, teachers of mathematics have given their pupils problems to solve, and teachers of classics have not encouraged their pupils to study Latin and Greek from texts with interlinear translations. The best teachers of history and literature no longer require their classes to memorize ready-made generalizations and to read only for the purpose of finding illustrations of these laws, nor to recite approved criticisms of literary masterpieces which the pupils have never read. These studies have, accordingly, long taken high rank for their disciplinary value; and, because of the way in which they have been taught, and not on account of any inherent superiority in their material, they have taken the leading place in most educational schemes.

Many teachers of science believe, however, that the consid-

eration of natural objects and phenomena with the purpose of determining their causal relations to one another may also furnish a valuable mental discipline, and one which cannot be so well acquired from any literary or mathematical study. Some of the advantages of this method are: (1) The facts whose relations are to be considered are parts of the individual experience of the pupil, instead of the imperfectly comprehended statements of the experience of some one else; (2) the determination of the relations which constitute the general principles of science may furnish the best possible field for training in the inductive process; (3) the application of these general principles to special cases which were not considered in making the induction, may furnish material for valuable training in the logical process, because the relation of the individual cases already studied to the general principle, must have been clearly seen before the induction could be made, and because the conclusion arrived at by the deductive process can usually be subjected to the rigid test of experiment, and its validity definitely determined.

It seems plain, however, that if this training is to be acquired from the study of science, the student must pursue it in the order named, *i. e.*, he must first observe, then generalize, then test the accuracy of his generalizations by drawing logical conclusions from them and observing or experimenting to verify his conclusions.

The text-book of science, not including laboratory-guides and observation-outlines, which leave the pupil to draw his own conclusions, is a treatise prepared on the logical method, and gives training, at the best, only in the logical process. The so-called inductive text-books arrange their descriptions of experiments more or less in the order of induction, but they require no real observation and experimentation on the part of the pupil, and by stating for him the generalization which is supposed to follow from the experiments which they describe, they remove all necessity for inductive reasoning on his part.

Indeed, so strongly has this method taken hold of our teachers of science, that in our leading colleges the experimental work is generally preceded by a text-book or lecture course on the subject, and in the laboratory manual which is most commended by teachers of the writer's acquaintance, the author recommends that no problem be assigned to be worked in the laboratory until the pupil has learned from the text-book ex-

actly how the experiment should result. To my mind, this is equivalent to saying that a pupil should never be allowed to undertake the solution of an algebraic equation until he knows the correct values of x and y, nor to read a Latin sentence until he has learned and recited the English translation.

In short, if we are to use the material of the sciences as a means of calling forth the mental activity of our pupils, we can do it only by allowing some opportunity for independent thought on their part, and the intervention of a text-book between them and the material which we wish them to study must always be a hindrance rather than an aid.

Without taking time to discuss the argument which is always advanced for the use of text-books, viz., that the time allowed for scientific study in school is too short to acquire the amount of knowledge of this subject which every pupil should have, unless he crams the knowledge from a text-book, it may be said that the quality of the knowledge which one possesses is of more importance than its quantity, and that one does not need to be a specialist in science to enable him to distinguish between the knowledge acquired by direct contact with natural objects and phenomena, and the "vast and varied misinformation" acquired by the literary method of science study.

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TEACHERS' SALARIES.

Were it possible to pay each teacher just what his or her services are worth—to make the remuneration proportionate to the quality of the service—an ideal system would be the result. There are public school teachers in every large city for whom no reasonable compensation would be too high. There are those for whom the lowest wages now paid would be beyond their deserts. Could the merit system of payment for public school teachers be introduced, many of the difficulties that now disturb boards of education would be at once eliminated. To get rid of a lazy or inefficient principal or teacher, it would be necessary only to make his salary sufficiently low. To reward merit, and to obtain the services of the most skillful teacher, it would be necessary only to make the salary suffi-

ciently high. The highest teaching ability is always at the command of a board of education that will honestly look for it, and that is willing and able to pay the requisite price. Other things being equal, men and women will seek that employment which gives them command of the largest amount of the good things of this life.

Unfortunately, the objections to the merit system of grading teachers' salaries are practically insuperable. It opens wide the door to favoritism of the most flagrant kind. The power that determines salaries is generally devoid of the special knowledge needed to determine degrees of merit. In private business, the matter is very different. There, the self-interest of the employer forces him to use his best ability in grading the salaries of his employees. He has every possible opportunity to discover what their merits are, as well as the special knowledge required for the purpose. A board of education has neither.

For this reason, it has been found necessary to establish schedules of salaries. In some places, salaries are increased according to length of service; in some places, according to the grade taught; in others, they are determined partly by one and partly by the other consideration. In a few cities the maximum pay in primary grades is the same as the maximum pay in grammar grades, but in most places it is much lower. It is in accord with the best established business practices that a beginner's salary should start at a certain point and advance with a fixed increment each year until a maximum is reached. But it is not in accord with sound business principles that there should be so great a difference as we sometimes find between the maximum salary in primary grades and the maximum salary in grammar grades. There is no difference either in the amount or in the character of the work to justify the discrimination against the primary teacher. It may be somewhat harder to manage children of twelve than to manage children of seven, though even this is doubtful; but, if it be more difficult to keep order in a class of older children, the difference is more than compensated by the fact that the teacher of younger children has usually a much larger number under her care. Boston has set a good example in making the maximum salary for all grades, except the three highest, the same. This maximum—$816 per annum—it is safe to say, is the highest average salary paid for primary teaching by any large

city in the country. The time has arrived when all large cities must raise the salary schedule at least as high as that of Boston, or else fall steadily behind in the educational race. The reason is obvious. It cannot set a high standard either of scholarship or of professional attainment. The teaching force is recruited almost exclusively from local sources. Local influences will inevitably prevent the establishment of a high standard for entrance to the teaching profession, so long as the compensation finally attainable is so low as not to justify elaborate preparation. Few men will undertake the expense of a systematic course of training for their daughters, if the ultimate compensation will barely suffice to keep body and soul together. Low salaries have had more to do with preventing the general spread of professional training for teachers than any other single cause. Hence, low salaries have done more than anything else to keep the standard of instruction low.

The argument against reasonably liberal salaries—that the supply of competent teachers is greater than the demand—is now heard in boards of education less frequently than in former times. In the first place, the avenues for lucrative employment that have been opened to women, are now so numerous, that many of the ablest among the graduates of our high schools no longer look to teaching as a means of livelihood. The vast development of secondary education in the shape of high schools which this country has witnessed during the last ten years, has itself attracted to these institutions many of our ablest and best educated women, who would otherwise have found their way into the primary schools. The young man or young woman who desires to teach prefers to take a college or university course and prepare himself or herself for high school work rather than to go directly from the high school to teach in a primary grade. Nor is this all. The medical profession and journalism are every year attracting a larger number of gifted and cultured women, who twenty years ago would have become teachers; while commercial pursuits, such as type-writing and book-keeping, are drawing away thousands who, with proper training, would make excellent instructors. It has come to pass that the great majority of public school teachers are women; and there are very few women who would not prefer teaching in a high school, or even the longer hours of business vocations, to controlling the restless spirits and breathing the vitiated atmosphere in a

primary class-room. Hence it happens that the supply of competent teachers is no longer greater than the demand, if, indeed, such were ever the case. On the contrary, there is probably not a large city in the country that is not experiencing great difficulty in obtaining the requisite number of trained teachers.

The demand for such teachers was never so great as at present, and it is constantly on the increase. The curriculum cannot be confined to the "Three R's." The time has gone by when "hearing lessons" could be regarded as teaching. Scientific methods of teaching all the standard subjects are now a *sine qua non*. Moreover, drawing, manual training, natural science, are all slowly but surely effecting an entrance into the school-room. Your untrained or inexperienced teacher is as incompetent to teach according to scientific methods or to deal with the new subjects of the curriculum, as a hod-carrier is to run a steam-engine. Boards of education, though slowly, are beginning to recognize the fact that this is pre-eminently an age of specialization, and that above all other walks of life the teacher's calling requires special preparation.

Trained teachers must be obtained. For the teacher without training and without experience, salaries cannot be made too low. The trained teacher, or the teacher of experience—that is to say, if the experience has been good, and not, as it very frequently is, bad—should receive a salary that will enable her to live as befits a member of a liberal profession and to pursue the means of culture, without which she will almost necessarily retrograde.

A large city cannot do better than to follow the example of Boston in two things: First, to require that all teachers shall either have professional training or successful experience; and, second, to place salaries at such a standard that the supply of such teachers will at least equal the demand.

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VI.

EDITORIAL.

There is a distinct movement in this country toward the elevation of the standard of admission to the professions of law and medicine. The superficial and inadequate instruction that is given in all but a very few professional schools, has so far attracted public attention that the legislatures are busy passing laws instituting state examining boards and providing that a professional diploma or degree shall not, of itself, be a license to practice. This is a wise and proper way to fix an acceptable minimum requirement; but when this has been accomplished, the duty of the great universities of the country has only begun. It is their function to teach law and medicine scientifically to students equipped by previous training for such work. For a university to content itself with being a mere adjunct to the state examination, is to forfeit all claim to public respect and confidence. The university teaching of law and medicine is not for the purpose of manufacturing as many practitioners as possible, but to furnish to the country scholarly and well-trained physicians and lawyers. This cannot be done by any institution that has an eye single to the fees to be collected from its students or that encourages students to divide their attention between their professional studies and some other occupation, gainful or not.

There are many successful professional men who write and speak atrocious English, and whose ignorance of the subjects that form part of a college education is profound. They are not creditable representatives of the intellectual life of America, and it is high time that some courageous university took the lead in cutting off the supply of such individuals. It is not possible now, nor will it be for some years to come, to insist upon a college education as a prerequisite for admission to the practice of law and medicine. Public sentiment is not educated up to that point. But there is no reason why a university should continue indefinitely to admit to its professional schools, students who would be denied entrance to the freshman class

of a college. At one or two of the larger universities there are already enough college graduates enrolled in the professional schools to make a creditable showing, even if all others were excluded. At the Harvard Medical School last year out of 304 students, 156 held literary or scientific degrees. At the Harvard Law School, 102 of the 153 students entering were college graduates. At Columbia College, for the decade between 1880–90, the proportion of students in the Law School who held preliminary degrees was 44 per cent., and in the Medical School it was 35 per cent. Harvard and Columbia, therefore, would have large schools of law and medicine, even if none but college graduates were admitted. It is their duty, as it would be to their honor, to take this forward and upward step.

Pending this important advance, another is in a fair way to be realized. The Johns Hopkins University has received about $280,000, toward the fund of $500,000, that is to endow a medical school open to women on the same terms as to men. Miss Mary Garrett of Baltimore has been the most liberal donor to this fund, and, aided by committees of women in various parts of the country, has been largely instrumental in securing the large amount already obtained. This episode affords another instance of the fact that a university which keeps in contact with progressive educational thought, can always secure the funds necessary to carry out its well-considered projects.

England is in a state of excitement over the proposition of the Conservative Chancellor of the Exchequer, Mr. Goschen, to employ the treasury surplus for the purpose of abolishing the fees now charged to pupils in the elementary schools. The official proposition is that after September next elementary education shall be free. To Americans this does not seem very startling, but the Briton looks at it through other spectacles. Not only does it run counter to his national traditions,—for England has been the last civilized country to appreciate the importance of elementary education for the whole people,—but it is involved with the question of religious teaching and the Established Church. The Church schools now occupy a privileged position, and one which they will not surrender without a struggle. The Liberals will be sure to

insist that the school boards must be elective, if the schools are to be entirely dependent on taxation for their support. This step will be bitterly opposed by the managers of the Church schools, and the Conservatives will probably offer some form of compromise. The outcome will be watched with interest in this country, where a contest on the religious question is plainly impending.

Commissioner Harris's suggestion that a series of informal conferences on specific points in educational theory or practice, be held at Toronto during the meeting of the National Educational Association, is bearing fruit. Four or five such conferences have been arranged, and the subjects are very happily chosen. The plan is to discuss informally certain topics with a view to formulating conclusions regarding them. These conclusions will be published as part of the proceedings of the Association, and will mark such real progress as is made from year to year.

To one accustomed to attending educational gatherings, the amount of chaff mixed with the wheat is very discouraging. The same platitudes, the same professional readers of papers, the same veteran voices are heard year after year; there is a good deal of what is called "inspiration," but precious little progress. It is hoped and expected that the Round Table Conferences at Toronto will accomplish something.

The season of college commencements is near at hand, and there will be the attendant and familiar outpouring of fervid oratory and crude thought, on profound problems of every sort, by inexperienced and half-trained students. It is urged in defense of this practice—for nearly everybody admits that it needs defense—that Commencement Day is peculiarly a students' celebration, and that on it they should be put forward as prominently as possible. This argument does not occupy a very elevated point of view, and, in addition, confuses two distinct things—the students, who are temporary, and the institution, which is permanent.

Each Commencement Day marks another mile-stone passed in the history of the college or university, as well as the formal severing of academic relations by a class of students. If the latter event needs celebration it should find it in Class Day,

which is peculiarly and properly a students' institution that has come to be recognized everywhere. Commencement Day, however, should be reserved for more important and significant things. In addition to the announcement of degrees and honors, the college or university should, by some of its officers, make to the world its report of progress accomplished. Some advance in science or some triumph of literature should be announced, criticised, or commented upon. The teaching body is the college, or university either, and its representatives, not those of a class of callow youths, should be heard at commencement. The dignified celebration of Commemoration Day at the Johns Hopkins University might well serve as a model for Commencement Day elsewhere.

Although the Harvard Overseers have negatived the proposals of a majority of the faculty looking to a shortening of the time necessary to take a degree, and to certain correlative changes, their decision cannot be regarded as final. The position of President Eliot and those who agree with him is too strong, and the needs they are striving to meet too real, to let the matter rest indefinitely as it now is. Already the students are acting upon the new idea. Each year an increasing number present themselves for the baccalaureate degree after a college residence of but three years. Hard work and faithful use of the long vacations make this possible.

It will probably be found that most, if not all, of those who thus bend their energies toward reducing, by one quarter, the term of college residence, are on their way to a professional school. For such students seven years of training—four in the college and three in the professional school—are too many, beyond any question. If the college course is not shortened, it is very probable that the so-called Columbia plan will come into general use at those institutions that are colleges and universities combined. For the student who does not expect to pursue a professional course, the college curriculum will remain four years in length. For the student who is preparing for the law, for medicine, or for the church, the more elementary and general professional studies will be accepted as part of the requirement for the baccalaureate degree, and thus the desired reduction in time will be accomplished. Signs are not wanting that this will be the outcome of the present movement.

VII.

REVIEWS.

Animal Life and Intelligence.—By C. Lloyd Morgan, F.G.S., Professor in and Dean of University College, Bristol. Boston: Ginn & Co., 1891, pp. xvi, 512.

Students of education will be interested in this volume for two reasons: because it treats of a range of topics the outcome of which will seriously affect educational views and methods, and, secondly, because it is itself an excellent educational help for securing a knowledge of these problems. Professor Morgan's volume deals with the central problems of modern biology, life and intelligence, and he brings to bear upon them all that is interesting and suggestive in the recent studies of these ever new questions. The opening chapters describe in a style attractive and popular, without sacrifice of accuracy, the general characteristics of the animal world, the origin and growth of functions, the variety of adaptations by means of which life is molded and continued. We then have three important chapters dealing, under the headings of "Variation and Natural Selection," "Heredity, and the Origin of Variations," and "Organic Evolution," with the typical factors of the relation of organism to environment, and of the forces by the action of which modification and progress is possible. The second portion of the work opens with an admirable chapter upon the senses of animals, in which the point is well emphasized that a correct understanding of sense-function must consider the immediate, useful applications of the senses under natural conditions. A brief exposition of the chief forms of mental processes is then given, clearly stating the prominent distinctions and the reasons for their hierarchical arrangement. The powers of animals then come up for detailed consideration under the usual division of the intelligence, the feelings, and the will. A final chapter on mental evolution, in which a general theory of the relation of mind to matter is offered, completes the work.

It will thus be seen that we have here, between the same covers, a convenient treatise on the general problems of comparative biology and comparative psychology; and this connection is significant. It places the emphasis upon the

view that the two are inseparable, and that no knowledge of mind is either complete or correct that neglects the wide range of mental phenomena in the animal world, and the purely natural conditions by which these functions are conditioned. While much of the volume is in the main expository, there is considerable originality both in the mode of treatment and in the putting forth of novel views and combinations of ideas. It is in every way a work evidencing ability, skill, clearness of statement, and a desire to be useful. It may safely be recommended, with assurance of interesting reading, as the best single work whereby to gain an insight into the chief problems of life and intelligence.

JOSEPH JASTROW.

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Psychology.—By MICHAEL MAHER, S. J. London: Longmans, Green & Co., 1890, pp. xvi, 569.

This book, by the professor of mental philosophy at Stonyhurst College, is the latest addition to the series of Catholic manuals of philosophy. It is a sober, scholarly, and important book. The author's conception of psychology is not that of the contemporary school of experimentalists. They rest content with describing psychology as a natural science, and deny to metaphysics any entrance to its domain. Professor Maher stands on the ground occupied by his scholastic predecessors and sees in psychology a science, to be sure, but an integral part of philosophy as well. His view is that if psychology is to justify its title to be considered a department of philosophy, "it is bound not to be satisfied with mere generalizations of facts; it must pass on to inquire into the inner nature and constitution of the root and subject of these phenomena; it must ascend from the knowledge of the effect to that of the cause (p. 3)." Empirical psychology must, then, be interpreted by rational psychology. From this standpoint and by the only method open to him, the author constructs a treatment of psychology that is simple, logical, and graceful. His definitions are clear and precise, his style is crisp and nervous, and his knowledge of the literature of his subject is very considerable. Professor Maher might easily have passed by entirely many of the modern doctrines as immaterial to his treatment of psychology; but he does not do so. Some of

the well-known positions of Wundt, Mill, Bain, Spencer, and Sully are stated and considered. Aristotle and Thomas Aquinas, however, weigh more with him than do the modern investigators who see in rational psychology and metaphysics only a stumbling-block.

It must be borne in mind that the author's general philosophical views have determined for him in advance the standpoint and method of this work. He holds that philosophy must and does dominate science, whether mental or physical. His position is perfectly intelligent and intelligible, whether one sympathizes with it or not. The prevailing view, and as it seems to me the truer view, of psychology is a different one. Nevertheless the careful study of Professor Maher's book will suggest many difficulties and apparent inconsistencies in the more usual mode of treatment that it may prove troublesome, or even impossible, to remove. However this may be, it is certainly instructive to attend to a careful discussion of familiar facts from a standpoint at variance with that which we usually occupy. It would be valuable if it only served to lessen the conceit and intolerance that have sent so many of our modern scientists into the ranks of the dogmatic philistines.

In one of his foot-notes the author puts very clearly an interesting suggestion of the physiological psychologists. He says, in reference to association by similarity and contiguity: "The physiological counterpart of the law of similarity probably lies in the increased facility of the same nerve-centers to act a second time, that of contiguity in the tendency of groups which have acted together to do so again."

N. M. B.

Switzerland.—By LINA HUG and RICHARD STEAD. New York: G. P. Putnam's Sons (Story of the Nations Series), 1890, pp. xxiii, 430.

The authors in their preface say that an account of the early history of the people who founded the Swiss League, in 1291 A. D., should be given. It must be admitted that no history of Switzerland can be considered complete that does not embrace in its pages somewhat of the history of those times when Charlemagne, Charles the Bald, the Zaerings, the Kyburgs, and the Houses of Savoy and Hapsburg were prominent in the battles and struggles of the people who inhabited Switzerland

prior to 1291, and whose desire to throw off the rule of various masters led them to form the League of that year.

The account of the early history is rather difficult reading, the authors seeming uncertain as to the use of the ancient or modern names of places, and one becomes confused when he reads of a town by its ancient name in one chapter and its modern name in the next. There is much also that is redundant and unnecessary to the story of the building of the nation, and the mind drifts from the story of the Swiss to matters which seem to have little or no connection with the Swiss people. This is intensified by the style, which is verbose, and relies upon punctuation and dashes to convey the authors' meaning rather than upon the words. As examples of this we may quote the following passages: "Their efforts to restore separate or self-government — the passionate yearning for national independence, innate in the German tribes, has done much to bring about the divisions of the German Empire into its many kingdoms, principalities, and duchies—met with far steadier and more violent opposition than was the case with the Burgundian." And again, "Jurisdiction, military command, summoning to wars, raising of taxes, fishing, hunting, courage, had become royal prerogatives—and the farmers kicked against the impositions—these were the functions of the governing courts."

The history of the fifteenth century, in which the cantons began to occupy different positions, one to another, some being subject to the federation and others to single cantons, some as inferior allies, with limited rights and privileges, and others as mere *protégés*, is interesting. It is followed by the account of the inter-cantonal wars and difficulties which make up a large part of the history of the Swiss.

The history of the three following centuries, while the Swiss are becoming noted as mercenaries and ready to serve any one for hire, embraces also the period of the Reformation. The narrative of this period is clearly told. The importance of the religious and political movement of this time, the touch of personal interest aroused by the description of the lives and character of Zwingli and Calvin, hold the reader's close attention. This portion of the book and the further account of the reaction which set in after the almost universal triumph of the Reformation, the effect of the reaction upon the cantons and upon the confederacy is interesting. From this

period to the end of the book there seems to be but one thing in the mind of the authors, *i.e.*, to cover the period in a limited number of pages, and the development of the constitution under the different forms it assumed from time to time is not satisfactorily treated. The reader cannot but feel that the later history has been slighted for a large mass of early legendary tales.

STEPHEN G. WILLIAMS.

NEW YORK.

A Guide Book to the Poetic and Dramatic Works of Robert Browning.—By GEORGE WILLIS COOKE. Boston: Houghton, Mifflin & Co., 1891, pp. xvi, 450.

This work, as its title indicates, is one of the numerous "helps" toward the study of Browning which the present interest in his poetry has called forth. Some of these helps are of real service to the Browning student, as is noticeably the case with Nettleship's Essays and Mrs. Orr's Hand-book. Others are either crude, ill-digested, misleading criticisms on particular works of the poet, or they are compilations of second-hand material, made up from Dr. Furnival's Bibliography of Browning's works, the Browning Society Papers, Mrs. Orr's Hand-book, and the various encyclopædias. Of this latter class is Mr. Cooke's *Guide-book*. It is nothing but a compilation of names, facts, and opinions, ill-arranged, and virtually unindexed, which the Browning student can easily find elsewhere. Taking it all in all, one would have to go far to find a worse specimen of the trade of book-making. As a matter of fact, the only feature that entitles it to be called a book is that it is printed and bound. It has no originality in matter or in treatment; and the order adopted is illogical and confusing. The work cannot, of course, be read consecutively any more than a dictionary; for the poems and proper names (such as are introduced) are arranged alphabetically. For instance, "A Death in the Desert" comes in its proper place near the beginning, while "Xanthus," the name of one of St. John's attendants, mentioned in that poem, is at the close of the book. The work cannot be safely used as a book of reference; for while it gives "Xanthus" as one of St. John's attendants, it fails to give "Pamphylax" and "Valens," who also attended him. Indeed it is difficult to determine why the

author inserts some names and leaves out others. Upon what principle should he mention "*Bottinius*—the public prosecutor, who in 'The Ring and the Book' presents the case against Count Guido and whose speech forms the Ninth Book of the poem," and fail to mention Hyacinthus, who defends Count Guido, and whose speech forms the Eighth Book?

The work is full of padding. Under the head "*Christopher Smart*"—*Parleyings, etc.*—is given in full Smart's "Song to David," occupying ten and a half solid pages. A simple reference to the earlier edition of Chambers' English Literature, where the entire poem is printed, would have been amply sufficient. In order to show changes made by Browning, parallel readings from the earlier and later editions of "Paracelsus" and of "Sordello" are given, which fill eighteen and a half pages. If such readings are necessary in a guide-book, why not give those from other poems—particularly the interesting and suggestive ones from the earlier and later editions of "Pauline"?

Instead of being a "Guide-book," as claimed in the title, the work fails to explain where explanation is needed, and attempts to do so when the meaning is clear. In the article on "The Ring and the Book" the author explains that *presbyter* means *priest,—abote* means *abbot,—canon* means *a member of the chapter or council of a bishop.* But he fails to tell anything about "that gold snow Jove rained on Rhodes," or what was "Thucydides' sole joke," alluded to in the speech of Bottinius. He explains the "Wormwood Star" of the Twelfth Book as follows: "The star which the superstition (*sic*) of the Middle Ages thought appeared when death approached"! If Mr. Cooke will turn to Rev. viii, 10 and 11, he will find the following: "And the third angel sounded and there fell a great star from heaven, burning as it were a lamp, and it fell upon the third part of the rivers, and upon the fountains of waters: And the name of the *star* is called *Wormwood:* and the third part of the waters became wormwood, and many men died of the waters because they were bitter." He will also find Browning's allusion, if he will take the trouble to examine, in Byron's "Ode from the French":

> Like the *Wormwood Star* foretold
> By the sainted seer of old,
> Show'ring down a fiery flood,
> Turning rivers into blood.

The truth of the matter is we are having too many "Guide-books" that mislead, and too many "Helps" that hinder, especially in the study of Browning.

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Geometry of Position.—By ROBERT H. GRAHAM, author of *Graphic and Analytic Statics*. London and New York: Macmillan & Co., 1891, pp. xv, 192.

Mr. Graham has made an excellent text-book for colleges and schools of engineering.

The study of the geometry of position in modern times[1] is confined to the present century, beginning with Carnot's work with that title published in 1803, and his work on "Transversals" which appeared in 1806. The subject was very little handled in the decades following by English mathematicians. Hutton, however, inserted an elementary discussion of it in an edition of his *Course of Mathematics*, and brief discussions of transversals were appended to editions of Euclid. The subject has received much more attention in the University of Dublin and colleges of Ireland, as witness the text-books and lectures of Mulcahy and Townsend on "Modern Geometry," the name applied to Carnot's discussions. The greatest names connected with the development and progress of this "Higher Modern Geometry" belong to the Continent. Of these, the names of Poncelet, Steiner, Chasles, and Cremona are the most prominent. It is an interesting fact that Poncelet wrote his treatise on the "Projective Properties of Figures" while a prisoner of war in Russia, having been captured in the retreat of Napoleon from Moscow.

It is rather singular that Mr. Graham does not mention Chasles among the great mathematicians whose names are connected with the progress and development of the geometry of position. Is the inventor of anharmonic ratios, and the author of the treatises on the higher modern geometry and projective conics, overlooked on account of his believing in his old age that the notorious forgeries which claimed for Pascal the great Newtonian discoveries were genuine?

[1] I use this term because it may be considered a disputed point whether some of the Greek mathematicians were not acquainted with the use of transversals.

Mr. Graham, beginning with the subject of Transversals, gives a very sound, clear course on Anharmonic Pencils and Ratios in some twenty pages. He then takes up the subject of Projective Conics, to which nearly half of the book is devoted. It is a fault of the discussion in the chapters on this subject that in some cases dual solutions of the problems proposed are given, based respectively on theorems and methods in Newton's Principia and on the principles of modern projective geometry. Such detailed comparisons of methods in a number of examples belong more to the history of mathematics or of the genesis of methods than to a text-book of this grade.

The advice of the old German professor to teachers in reference to their pupils, namely, " Nicht mit ihnen prahlen sondern sie tüchtig einüben," should be equally heeded by authors of text-books.

It is proper and natural, however, to show how readily Pascal's famous theorem[2] (discovered by him at the age of sixteen) may be demonstrated by the new method. The chapters III, IV, V, and VI, beginning with the Projective Property of Reciprocal Figures, require a knowledge of mechanics on the part of the pupil. They treat of the funicular polygon (or use it, rather); of Culmann's Nullsystem (which the author claims for Maxwell), elliptic arches, stress diagrams, centers of gravity, ellipses of inertia and the elastic line by the methods of projective geometry.

These subjects are treated with clearness and precision, and numerous illustrative problems are added for solution by pupils. These last chapters remind us of the grave defect in the mathematical training in the high schools of the United States in the neglect of the study of the elements of mechanics. It goes without saying that the study of the Geometry of Position, successfully introduced into the courses of mathematics of American colleges, would greatly promote the mental pluck and power of analysis of our earnest mathematical students. Such courses would cause, moreover, more thorough study of elementary geometry, and especially of geometrical analysis, now so sadly neglected in many of the high schools, academies and colleges. The examples and problems for solution appended to each chapter of Mr. Graham's book add greatly to its usefulness. It would have been better,

[2] " In every simple hexagon inscribed in a conic the points of intersection of the three pairs of opposite sides lie on a straight line."

perhaps, to adopt the method of Potts in his edition of Euclid, and others, and add hints for the solution of these in an appendix.

CHARLES S. VENABLE.

UNIVERSITY OF VIRGINIA.

English Composition.—By JOHN NICHOL, M. A. Balliol, Oxon, LL.D., Professor of English Language and Literature in the University of Glasgow. London and New York: Macmillan & Co., 1889, pp. 128.

Questions and Exercises on English Composition.—By J. NICHOL, M.A. Oxon, LL.D., late Professor of English Literature in the University of Glasgow, and W. S. MCCORMICK, M. A., Lecturer on English Literature in Queen Margaret College, Glasgow. London and New York: Macmillan & Co., 1890, pp. 124.

The first of these, one of the series of Literature Primers edited by the late J. R. Green, has already been before the public since 1878. Bound with it, arranged according to the same order of topics, and making with it a handy little pocket volume, now appears the *Questions and Exercises*, furnishing a quite full and varied apparatus for study and practice in the grammatical details of composition. To these latter the book confines itself, the larger forms and processes having no treatment in its pages.

A course in composition must of necessity deal with many and various details of rule, caution, example; but there are two very different methods of meeting these. The one, starting from a few large and significant principles, which it merely illustrates by such details as are pertinent, works for the utmost attainable simplicity; seeking at the same time to give the student an impulse toward writing, an interest in those larger literary objects which alone can make grammatical details interesting. Get the student once awakened to the object that his writing is to accomplish, and you have got him just so far in the attitude of a discoverer, whose quickened mind will not wait for rules and cautions, but will go out to meet them, nay, make them for himself. The other method, beginning at details, which it groups and classifies under principles, does not shun multiplicity even if it does not work for it. Careful to put up a guide-post at every crook and turn of the student's way, it is not so solicitous to keep him heartened and inspired with glimpses of his goal; and so, for all the method cares, his training in expression may be just a dead lift, a grind. To this latter method belongs quite decidedly the book before us. Not that it is dull or heavy; on the contrary

both precept and example are bright, fresh, and to the point. But its principles seem chosen not so much to be a guide and support to the student's mind, a center round which his ideas of composition shall arrange themselves, as a mere occasion of classification; they give one the impression of being the heads made necessary in marshaling the contents of a well-stocked note book. As a consequence the examples, which are mostly good, are sometimes rather remote from practical needs. There is a tendency to bring together mere curiosities of expression, which are helpful indeed so far as they are strange and funny, but of little real aid toward the main purpose of becoming a writer. It is not certain that the author has really placed his mind by the side of the student's mind, to anticipate the latter's needs and objections, and to allure him step by step toward his goal. The same thing is true of the *Questions and Exercises.* They are based mainly on the mistakes and usages gleaned from standard literature, and so far, well; but would it not be more helpful to set the student correcting the mistakes that arise in his own practical life—the errors of John Smith rather than the errors of Edmund Burke? For another thing, the fact that they are a museum of extracts scrupulously ordered by topis, each sentence thus advertising its own error or usage, seems to me to take away from rather than increase their utility as a means of awakening thought and furnishing drill As a well-ordered collection of instances, the book is useful, and able; for the help which is also stimulus and inspiration. we must look further, perhaps to some book yet to be written.

AMHERST COLLEGE. JOHN F. GENUNG.

Herodotus, Book VII; with notes.—By AGNATA F. BUTLER. London and New York: Macmillan & Co., 1891, pp. xvi, 302.

Whether we concede or deny to Herodotus the title of "Father of history," there is no doubt that he is the father of literary prose, and as such entitled to the careful and enthusiastic labor of the student of literature.

True to the original signification of the Greek word *ἱστορία*, this work is not a mere record, but a "research," and Herodotus was no mere chronicler of wars and expeditions, but a keen-eyed traveler, a lover of wonders, and the prince of delightful story-tellers. Not only has Clio inspired him, but Calliope, Thalia, and Melpomene as well. His view of life is not

unlike that of the contemporary dramatists—that the power of fate is irresistible, that the gods are imminent in human affairs, that their enmity is excited by the proud prosperity of men, and that "insolence, the offspring of satiety," brings ruin. Except in outward form, Herodotus' account of the Persian war is as much a tragedy as Æschylus' Persæ.

This edition takes up the seventh book, a point where the story is most intensely interesting. Xerxes, the magnificent, is one of those whom the gods delight to humble. His march has all the pomp and circumstance of a pageant. Herodotus dwells with pleasure upon the preparations, even to the curious accouterments of the barbarians with their swarthy faces and turbaned heads. Then he recounts the details of the bridging of the Hellespont and the tunneling of Mount Athos; the rendezvous at Therma, the visit of Xerxes to the beautiful vale of Tempe; and finally the topography of Thermopylæ, where the immortal battle was fought.

There is a certain trimness about the notes, a close cincture as if for swiftness, that he who reads may run. There is no superfluous matter; the translations are few and idiomatic; the student is expected to go to the proper sources for most of his lexical and grammatical information. But the editor has done good service in bringing together and classifying noteworthy constructions or meanings. Another commendable feature is the aptness of the references to contemporary writers in other fields, notably to Pindar and Sophocles.

The historical and geographical notes are clear and concise.

The treatment of particles and prepositions is good. The treatment of the genitive case is not so satisfactory. "Loose genitive of connection," though it may have high authority, is after all no explanation. Why should we not follow Jelf, and regard the genitive as the point from which we proceed, whether physically or mentally, the necessary "antecedent notion?" I commend the book, and its editor.

ANGIE CLARA CHAPIN.

WELLESLEY COLLEGE.

A Student's History of England.—By SAMUEL RAWSON GARDINER, London and New York: Longmans, Green & Co., 1890, vol. i, pp. xxxii, 378.

The first volume of Mr. Gardiner's new *Students' History of England* begins with palæolithic man, and ends with the year

1509—the year which marks the accession of Henry VIII. The book is not intended for beginners; it calls for a certain maturity of mind and seriousness of purpose in the reader. The constitution of the folk-moot, of the hundred-moot, of the shire-moot, and of the witenagemot; the constitutions of Clarendon, the Curia Regia, the system of recognitions—these are not matters that attract the reader who is in search simply of entertainment. Yet these are the matters of abiding worth, of educational value in English history. Mr. Gardiner's presentation of all these subjects is admirable. The development of the English constitution is traced step by step. The local governmental institutions of the Anglo-Saxons, such as the township, the hundred, and the shire having been described, the way in which these were depressed, modified, and developed under Norman and Plantagenet influences, is carefully traced. The prominence given to these matters, makes the book an excellent introduction to the larger constitutional histories of Stubbs, Gneist, and others.

But while the growth of the institutions of government is given by our author a foremost place in his new work, still he does not forget that national life is many-sided, and that a book which purports to be a history of a people, should be a reflection of this diversity. Religious, social, economic, and literary matters are given full recognition, and are made to contribute color, warmth, and life to the narrative.

The value of the matter contained in the volume is greatly enhanced by the attractiveness of the language in which it is presented. Mr. Gardiner's style is a model of plain, straightforward, perspicacious English. The illustrations, 173 in number, were prepared under the direction of Mr. St. John Hope, secretary to the Society of Antiquaries. The series, which begins with the flint instruments of the Stone Age, and carries us through the Roman, the Anglo-Saxon, the Norman, and the Plantagenet periods, is a very valuable and helpful commentary on the text. The book is also well supplied with genealogical tables, summaries, bibliographies of the several periods, and a full index. It is, however, without maps; but the announcement is made that the work, when complete, is to be accompanied by an atlas.

PHILIP VAN NESS MYERS.

UNIVERSITY OF CINCINNATI.

The Reader's Guide in Economic, Social, and Political Science.—Edited by R. R. BOWKER and GEORGE ILES. New York: The Society for Political Education, 1891, pp. 169.

The energetic and accomplished editors of this "classified bibliography, American, English, French, and German"—why not Italian—of the political and social sciences, have undertaken and partially accomplished a most useful work; but they have not completed it. This edition, which ought to be only the first of many, is susceptible of great improvement. The scheme of classification that is followed is neither logical nor apparent. The main heads seem to be Political Economy, Public Finance, Social Science and Sociology, Political Science, International Law, and Statistics, but this fact is not made clear either in the table of contents or in the typographical arrangement. Neither are these subjects systematically arranged. "Statistics" is tacked on after "International Law," although its proper place is either as a sub-head of Social Science, or in juxtaposition to it. The arrangement of titles under each head, according to the country of their origin is wise, but ought to be made more apparent. The French and German titles are not nearly numerous enough, and if those countries are to be represented at all, they should be treated adequately. The titles which appear give evidence of having been selected at random.

The details of the bibliography are very carefully and laboriously worked out, but they do not fail to show the omissions and unevenness apparently inseparable from bibliographical work, however painstaking. Laurent's great work, *Études sur l'Histoire de l'Humanité*, is so largely institutional that it might properly appear in the list of general works on political science (pp. 93–96), and its great value emphasizes the omission. Under Statistics (pp. 123–25) there is no mention of von Mayr's new *Allgemeines Statistisches Archiv*. Under Banking (pp. 40–43) Dunbar's *Chapters on the Theory and History of Banking* is omitted, although the same author's other work, also published in 1891, is given. Under Political Economy, General Works, (pp. 1–4), Keynes' *Scope and Method of Political Economy* is not found. In some cases the dates of the birth and death of authors are given, but more often they are omitted. The death of Henry Fawcett is noted (p. 11), but not that of Bonamy Price (p. 16).

The statement (p. 13) that Adam Smith's *Wealth of Nations*

is the "only book to which has been awarded the honor of a centenary commemoration" is, to say the least, incautious. The centenary of Kant's *Kritik der reinen Vernunft* was so commemorated in 1881. Somewhere the annual known as *La Vie Politique 'à l'Étranger*, by Lavisse, should have been inserted. After what is said of Mr. Bryce's *American Commonwealth* (p. 99), M. Carlier's book—of which the title is wrongly given—is not sufficiently emphasized by being called "a masterly review" (p. 107). Professor Burgess has said of this work that it is "the most comprehensive and exhaustive in any language upon the public law and political institutions of the United States" (*Political Science Quarterly*, vi: 164). "Church and State" is very scantily treated (pp. 116–7), and the literature dealing with the relations of the state to education is omitted entirely, only a few titles being included incidentally under other heads.

The editors have attempted almost too much in endeavoring to compress so many subjects into a single bibliography, but they can do a great deal to improve this first edition. As it is, it is very useful; and as it can be made, it will be indispensable to students and teachers of political and social science.

N. M. B.

Shakespeare's Comedy of the Merchant of Venice.—Edited, with Notes, by HOMER B. SPRAGUE, A.M., Ph.D., President of the University of North Dakota. Chicago: S. R. Winchell & Co., 1890, pp. 188.

Numerous school editions of this most delightful of Shakespeare's comedies have appeared from time to time, and one wonders at the outset why President Sprague should have set himself the task of giving us still another. In his brief and modest preface he states four reasons: namely, (1) to furnish notes that may stimulate thought rather than supersede it; (2) to give the results of the latest critical research; (3) to present the opinions of more than one authority on all disputed points of any considerable importance; (4) to include for the teacher's guidance a symposium of the best thought and practice in teaching English literature.

It will need only a most cursory examination of the text and annotations to convince any one at all familiar with other editions of this play, that the foregoing claims have been fully substantiated. Without disparaging other editions of the

Merchant of Venice, some of which are excellent, notably that of Rolfe, it must be admitted, nevertheless, that most of them are not well adapted for school use.

In President Sprague's book one hesitates which most to admire, the erudition and scholarship displayed in the wide range of his critical annotation, his unerring discernment of what the pupil most needs, or the masterly skill with which he suggests rather than asserts the true interpretation of the author, thereby keeping the pupil's intelligence ever alert to discover and seize upon the nice distinctions of thought in which Shakespeare abounds.

In this last respect, particularly, the work of President Sprague is unique and difficult to excel. Instead of affirming in the *ipse dixit* manner, common to so many editors, that the text means thus and so, President Sprague is satisfied merely to suggest an interpretation where help is needed; but consistently with his avowed claim of "stimulating rather than of superseding thought," he puts his suggestion into the interrogative form and affords the pupil the opportunity to decide for himself.

Like so many editors who make a fetich of the old quartos and folios, President Sprague prefers to use *alablaster* instead of alabaster (l. 84), *moe* instead of more (l. 108), etc., although Shakespeare's own spelling of the same words is variable and elsewhere in conformity with present usage.

The annotations are placed at the bottom of the page, to which some teachers may demur, and comprise fully one-half of the 123 pages devoted to the text and notes. Not the least valuable features of the book are the critical comments on the play by distinguished Shakespearean scholars, suggestions and plans for study, specimens of examination papers, topics for essays, and so on.

The introduction, likewise, is most admirable. Taken as a whole, President Sprague's book is a credit to American scholarship. It exhibits, besides, a pedagogical insight that is as rare as it is remarkable. It cannot fail to give a great impetus to the study of Shakespeare in the schools.

A. B. P.

Handcraft: Being an English Exposition of Slöjd as cultivated in Sweden.—By JOHN D. SUTCLIFFE, of the Manchester Recreative Evening Classes. New York: Charles E. Merrill & Co., 1890, pp. 79.

The publication of this treatise is one more indication of the widely felt need of introducing manual methods into the lower grade schools, and it is evident that the author is entirely satisfied that the adoption of the Swedish method will furnish a complete solution of the problem. There is no question that such a detailed receipt ready to the hand, and developed by actual experiment, would be a most desirable acquisition, if it were not that there are weighty reasons which prevent its meeting our own special conditions. In the first place, manual training exercises are helpful and efficient only in the degree in which they advance educational ends, and the particular operations selected must be those which best fulfill the requirements of economy in tools and material, neatness in operation, adaptability to class methods, and fitness to the varying capacities of the pupils. Froebel's gifts and occupations of the kindergarten are a happy illustration of the successful application of this principle to one set of conditions. The exercises of the Swedish Sloyd represent an attempt to meet another set of conditions by making use of an additional principle, viz., that by creating in each exercise some useful article, an added interest and moral value is imparted to the work. It is this principle, consequently, which has determined the exact form of each exercise and produced a series of pieces, useful perhaps in Sweden, but of little direct service among us; and the whole value of the utilitarian idea is lost when it is sought to apply them to other conditions. There is very little zest for an American boy in laboriously producing a key label or book carrier that he knows would never be used for that purpose. In order to obtain in every case a piece of useful application, the strictly disciplinary value of the exercise is subordinated to its constructive necessities. These, in many cases, involve the repetition of a few very simple operations, as in the long flower-pot stand, and the foot-stool, and consequently consume considerable labor and material, without a proportionate educational return.

The list of tools given for carrying out the system is somewhat formidable, including as it does, practically, all of the ordinary tools of the carpenter; and as some of the most expensive are used but a few times during the course, the prac-

tice obtained can hardly be sufficient to impart much benefit. But with our well-developed methods in high school work, our direct interest in Sloyd is limited to the lower grades, and here the employment of a large number of expensive tools is quite out of the question. The only methods worth considering for these stages are those which need but two or three tools of the simplest character, and which can be prosecuted for the most part in the regular class-room.

The general use of sandpaper to secure the final finish of the work is another point which must be strongly objected to. By its employment a purely mechanical operation is substituted for the consciously guided hand movement, and a superficial smoothness is obtained at a sacrifice of exactness. The use of models instead of working drawings is also a weakness of the system. Nothing develops the power of clear imagination and exact thinking like the dependence upon a drawing in constructive work, and it should be made use of wherever practicable.

In fact, all that the system herein described has of benefit for us lies in its suggestiveness. Neither its exact exercises nor its methods can be applied to our conditions with advantage, but, in the simplicity of its first exercises and in the free-hand character of some of the knife pieces, there is much that is helpful. In these pieces of free outlines and delicate curves much good training may be given in the principles of design and in the appreciation of graceful form and good proportion.

PRATT INSTITUTE,
BROOKLYN, N. Y.

CHARLES R. RICHARDS.

Notes on Recent Pedagogical Literature.

TABELLEN ZUR GESCHICHTE DER PÄDAGOGIK. Ein Repetitionsbuch für Seminaristen und Lehrer.—Herausgegeben von W. Pätzold. Jena: Fr. Mauke's Verlag (A. Schenck), 1891, S. 30.

This is a compact compilation of names, facts, and dates, for use in preparing for examinations. The author has omitted many educationists of the first order of importance, apparently because they were not Germans. Conversely, many Germans of merely local reputation are inserted. The book lacks proportion.

ANNUAIRE DE L'ENSEIGNEMENT PRIMAIRE. Publié sous la Direction de M. Jost. Paris: A. Colin et Cie., 1891, pp. 644.

M. Jost's valuable annual is in its seventh year. It is a

veritable mine of information concerning elementary education in France, the *personnel* of the administrative and teaching bodies, the newest laws and ministerial decrees. The annexed essays are even more interesting than usual, and of particular merit are that by M. Gréard on "Le rôle des femmes dans l'Enseignement primaire," and that on "Le Concentration dans le plan d'Études," the latter being a study in the Herbartian pedagogy. The many American readers of M. Gabriel Compayré will be glad to see that he has become Rector of the Academy of Poitiers (p. 132).

BULLETIN DE L'ASSOCIATION NATIONALE POUR LA RÉFORME DE L'ENSEIGNEMENT SECONDAIRE, Nos. 1 et 2. Paris: Au Siège de l'Association, 1890, pp. 23, 31.

The association which issues this *Bulletin* is organized to bring about such reforms in French secondary education as will adjust it to the needs of contemporary society. The association forcibly attacks the classical course in the Lycées as inefficient. The alternative course, in which the modern languages are substituted for Greek and Latin, is preferable, but not satisfactory. A new organization is demanded for the secondary schools in order that a broad and modern foundation may be laid before any specialization is undertaken. This is to include instruction in morals and "civics," in the French language and literature, in English and German, in history, geography, and elementary science. Specialization, whether toward the classics or natural science, should not be permitted until such a general course has been completed. The proposition, then, involves an *enseignement secondaire* uniform for all, and an *enseignement secondaire supérieur*, diversified to meet all rational needs. The similarity of this plan to some of the propositions for an *Einheitsschule* in Germany (EDUCATIONAL REVIEW, I: 378), is apparent. The president of the association is M. Georges Berger, the famous director-general of the exposition of 1889.

BULLETIN UNIVERSITAIRE DE L'ENSEIGNEMENT SECONDAIRE, Nos. 1, 2, 3, et 4. Sécretaire de le Reduction, CH. SEIGNOBOS. Paris: Armand Colin et Cie., 1891, pp. 144.

This *Bulletin*, like the one just mentioned, is an interesting sign of the times. It marks the recognition of a common interest on the part of the university professors and the secondary teachers. The Sorbonne has organized a very simple and yet effective course of instruction for those students who look forward to becoming secondary teachers. The central figure

in the course is M. Henri Marion, professor of the science of education. He holds a series of practical conferences with his students, who then spend two weeks in the Lycées of Paris. This experience concluded, they are divided into groups, and each group receives detailed instruction from the professor in charge of the subject that the members of the group are preparing themselves to teach. While only the beginning of a more comprehensive plan, this system is practical and efficient. This *Bulletin Universitaire*, which is published as a supplement to the well-known *Révue Internationale de l'Enseignement*, has been established for the purpose of publishing to a wider public the various lectures and conferences that are given as part of the above plan. It should have many careful readers in America.

DAS STAATSSEMINAR FÜR PÄDAGOGIK. Von Dr. E. VON SALLWÜRK. Gotha: Emil Behrend, 1890, S. 40.

An interesting and forcible argument for institutions, separate from the universities, to give to intending teachers in secondary schools some instruction in the principles and practice of their art. The author insists that the universities are not organized so as to do all that is required; a *Staatsseminar für Pädagogik* is necessary in addition.

PRUSSIAN SCHOOLS THROUGH AMERICAN EYES: a report to the New York State Department of Public Instruction. By JAMES RUSSELL PARSONS, Jr., late U. S. Consul at Aix-la-Chapelle. Syracuse, N. Y.: C. W. Bardeen, 1891, pp. vii, 82.

Mr. Parsons is to be congratulated on having compiled this painstaking statement, and Mr. Bardeen on having rescued it from the undeserved obscurity of an official publication. The teacher who wishes to know exactly what the much praised Prussian elementary schools do, and on what their excellence depends, will find it set forth here compactly and clearly. The New York reader will have the additional benefit of frequent comparisons between Prussian educational details and those in his own State. All those wise persons who are sure that America can work out its own pedagogic salvation without learning from the experience of any other nation, especially Germany, should not read this book. It might disturb their equanimity.

N. M. B.

VIII.

EDUCATION IN FOREIGN PERIODICALS.

Some Characteristics of a Sound Mind.

'MRS. SOPHIE BRYANT, D. SC., IN "THE EDUCATIONAL TIMES."

"When it is desired to ascertain the size and shape of a room the problem is easily solved by the application of a foot rule, and the use of certain well-known geometrical and arithmetical principles. With this example in mind it is possible to conceive of an enterprising pedagogue who might seek to gauge the kind and magnitude of the human minds committed to his care in terms of the various faculties which, to use the popular phrase, they possess. The estimates of such a one would be stated somewhat as follows: Perception, 60°; Conception, 50°; Imagination, 10°; Reasoning, 5°, and so on. For the estimate of moral qualities he might, in his imaginings, use a similar process, and thus, having applied his tape measure all round the intellectual and moral man, he would assign to each subject of measurement his proper place in a list of candidates competing for places.

"Now I am not going to assert that this notion of applying the tape measure to the qualities of the inner man is so wholly fallacious as to be quite useless for the practical purpose of selecting candidates for particular offices in certain cases. That physical qualities can be so measured has been shown by several, Mr. Francis Galton being probably the best known experimenter; and in a sense, faculty, as well as knowledge, is measured in all examinations. Indeed, I have no doubt we could measure in ways similar to those employed in physical measurements, though less accurately, some of a man's intellectual powers. The difficulty, however, even in a partial way, is very great, so great that only those who have tried can easily appreciate how great it is, and the notion that the whole character of the man or child could be apprehended by measurements ever so distinctly approximate, as one apprehends the size and magnitude of a physical object, is one which can only be characterized as an inconsiderate dream.

"One reason why we cannot measure the more fundamental

features of character is that they are all mutually involved, and another is that we cannot possibly select a unit of measurement in the ordinary physical sense. Now, reflection on this source of difficulty suggests the thought that, after all, though we cannot measure A's faculties as we measure his height and weight, we could estimate A's humanity as a whole by comparing his manifested character as a whole with the typical character proper to him by his divergence from the type. This normally developed type is, in fact, the only unit possible to us. It is not a unit proper, but a maximum or limit. Average human nature will not answer instead, partly because we cannot determine, except when statistics are applicable, what average human nature is, and, moreover, the average changes from age to age. On the other hand, we can determine the characteristics of the type, first, because we have a knowledge, more or less, of the type as that which at our very best we tend to become; and, secondly, because, looking outside ourselves, we know the type by the fruits it brings forth, moral use and intellectual truth.

"In the intellectual sphere, doubt and difficulty as to the nature of the type are least when we look to the objective test of a good intellect, namely, its habit of thinking and finding the truth. When we do not digress into metaphysical subtleties, we know quite well what we can mean by truth. It is therefore not so hopeless—I will not say it is not hard—to determine generally the character of the truth-producing mind, and the truth-producing mind is the mind of sound intellect. Ability to find truth is the general mark of a sound intellect, sound in sense, sound in judgment, and sound in reasoning. Such an intellect is subject to no illusions of sense, does not see things where they are not and as they are not, does not hear statements that were never made nor report events as they never occurred, but hears, sees, and therefore reports accurately in accordance, that is to say, with the actual facts of the case. The sound mind, for instance, sees a shadow on the wall or a moonbeam through the window, when another sees a hooded ghost. Such a mind, moreover, rightly interprets the impressions received, bringing to bear on them the full light of its previous experience: it judges soundly, it sees things whole; it does not muddle new impressions and old together, but understands in orderly, consistent sequence those relations of the new to the old which make the new intelligible. It appre-

ciates the fact that a noise in the street is not the sound of a gunpowder explosion, and that the baby's cry upstairs is not that of an infant in dire distress. Just as in sound perception we say that is not so and so, meaning that the fact is different from the idea as which we were about to perceive it, so in sound judgment we say precisely the same thing, meaning to condemn the inference which too hastily springs into being, because we keep our heads and note that the facts are not consistent with our theory. The sound intellect observes accurately, judges soundly; it also reasons correctly, and the correctness of its reasoning is a simple consequence of the soundness of its judgments. It rejects pairs of inconsistent judgments unrelentingly, just as it condemns the moonlight ghosts and the slovenly single judgments—the false interpretations of fact by thought, through lack of steadiness in perceiving that facts and ideas are inconsistent with each other. Reasoning differs from judgment only in this, that in reasoning we compare ideas only with ideas for the time, and reason correctly if we leave no inconsistencies behind. A sound reasoner may not indeed see his way to escape inconsistencies which press on him from the facts of the case, but the mark of his soundness is his sense of the inconsistency, and his ever-present desire to get rid of it.

"A mind, therefore, is sound—sound in perception, sound in judgment, sound in reasoning—when, and when only, it is active in the rejection of inconsistencies between thought and things, and wide-awake, therefore, also, to receive every scrap of information that comes to it, shedding new light of consistency or inconsistency on its contents. It must be, at one and the same time, an open, docile, receptive mind and a strictly accurate, logical mind, insistent upon seeing truth for itself, solid and transparent through and through."

The School of the Future.

C. M. IN THE "ZEITUNG FÜR DAS HÖHERE UNTERRICHTSWESEN DEUTSCHLANDS."

"The school of the future will be free from top to bottom. Neither in form nor in fact will it be the privilege or possession of the rich: for the state must rest upon the truth that virtue and usefulness, wherever found, are to be sought out and developed. Free instruction alone will not suffice to accom-

plish this. If the poverty of parents is not to be permitted to narrow, as it now does so often, the future opportunities of a child, the state must stand ready to care for him up to that time when he is able to pass an intelligent judgment upon his own prospects and provide for his own support. Up to such a time, perhaps then to the seventeenth year of life, the state must make proper provision for the sustenance and care of every child whose parents are too poor to provide either for his material or intellectual care. The question as to the parents' poverty could readily be determined by reference to the assessments made for the purposes of taxation.

"When this comes to pass there will be a real aristocracy of the educated. One can readily see that then the German people will exercise a material and intellectual influence in the world, to which that gained mainly by force of arms will be scarcely comparable."

The School for Oriental Languages at Berlin.

M. J. DARMESTETER IN THE "RÉVUE POLITIQUE ET LITTÉRAIRE."

"The organizer and director of the school is Dr. Edward Sachau, ordinary professor in the University and member of the Academy of Sciences of Berlin. Although still young, having been born in 1845, Dr. Sachau is the most comprehensive, and perhaps the best known, of German Orientalists. He studied Semitic and Aryan languages at Kiel, Leipsic, and Berlin, and then passed two years in the libraries of London and Oxford. In 1869 he accepted a chair at the University of Vienna, and quitted it in 1876 to become a professor at Berlin. Having been charged by his government with studying, principally in France and England, the methods of practical instruction in the Oriental languages, he found in the school of Paris that of which he was in search, and the Berlin institution reproduces faithfully the spirit and the letter of the Convention's decree, made in the year III on the 10 Germinàl.

"The object of the school is practical instruction in the Oriental languages and in the facts (*Realien*) relative to the corresponding geographical domain—namely, the religious customs and usages, geography, statistics, modern history, etc. The programme comprises: (1) instruction in the grammar and vocabulary of daily life and commerce; (2) language exer-

cises—both oral and written; (3) practice in the most usual forms of composition, official and private; (4) such other knowledge as is necessary to gain an understanding of the countries and the people. The theoretical instruction is given by German professors, while the practical exercises are directed by an Oriental *lector*.

"The school is principally designed to prepare interpreters for the diplomatic service, but it is open to students of all kinds. It was opened in October, 1887, and the languages in which instruction was given during the first year were Chinese, Japanese, Hindustani, Arabic, Persian, Turkish, and Souahéli, each taught by a European professor. For Chinese there were two lectors, one for Northern Chinese, that of Pekin, and one for Southern Chinese, that of Canton: for there is less in common between these two languages than between Italian and French. There were also two lectors for Arabic; one for the Arabic of Egypt, and one for the Arabic of Syria. Hindustani and Persian were represented by Europeans only, and Turkish was taught by an Armenian. The school is now in its fourth year and has about one hundred students. The largest number are studying Arabic, Chinese, Japanese, and Turkish. About one-half of the students are preparing for the consular service, and one-half for commerce with the Oriental nations. The courses have been extended to include Tamoul, Armenian, Roumanian, Russian, and modern Greek."